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A FEW OBSERVATIONS ON THE SO-CALLED "PINK EYE DISEASE."

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AN outbreak of this malady having occurred in Grantham, and the unusual phenomena presented in its course, has been an incentive to investigation as to its pathology; and the result of such inquiry, as far as my limited time would allow, I thought might interest the readers of the VETERINARY JOURNAL. Many acrimonious disputes have arisen as to its histology, and it would perhaps be presumption for me to offer a definite opinion respecting its identity; yet, as to it being a modified form of Influenza, as some contend, I can hardly imagine such an anomaly as a disease at one time presenting almost entirely different symptoms from those manifested at another, to be a product of one and the same causation. Be what may the modifying agencies to thwart its natural course, such a metamorphosis to my mind is hardly feasible.

The disease first made its appearance in Grantham in the beginning of February of this year, and can be distinctly traced from Nottingham, the horses having been turned on a grass field along with others belonging to different owners, which animals became subjects of the disease. (Here pointing to a laxity of power vested in local authorities with regard to all communicable diseases.)

The general symptoms of the malady are so well known to the

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profession, that I will simply allude to the pathognomic signs, and to the explosive manner in which it sometimes manifests itself: amongst others, two marked instances of such a manifestation having come under my observation, perhaps I may do well to quote them. On the 21st of February, a hunter, the property of W. Burdett Coutts, Esq., apparently in perfect health, was sent out for hunting, and after having proceeded but a few miles the animal was observed to be suffering from Epistaxis. Shortly afterwards a peculiarity was noticed in the action behind, and the horse was at once brought home. On my seeing it, further symptoms had become manifested, viz., the characteristic flexing of hind fetlocks in quick succession (pulse 65, temp. 103⅖°.). The attack proved to be of an ephemeral character. Another instance occurred in a hunter, the property of P. J. Anson, Esq. The horse had proceeded but about two miles on the way to covert, when, to use the owner's expression, he "reeled all over the road," and with difficulty reached home, where I saw him a few minutes afterwards. (Pulse 70, temp. 102⅕°.) This proved to be a most protracted case, and unfortunately communicated the disease to the rest of the stud, although in contact but a short time—one of the animals becoming affected a second time, the last attack being much the worst. The highest temperature which I have noticed during this disease occurred in a pony, the property of F. W. Bedford, Esq., viz., 107⅖°, and pulse 104. The animal ultimately recovered.

**Post-mortem* appearance.—The following may serve as a fair example:—The horse was the property of W. Burdett Coutts, Esq., and had been suffering from the disease in its worst form. The chances of recovery being remote, and in imminent danger of spreading the disease to other valuable horses in the immediate vicinity, the owner wisely consented to have the animal destroyed. On opening the abdominal and thoracic cavities, the whole of the viscera presented a congested appearance. The mucous membrane of stomach and duodenum was slightly thickened, which thickening proved to be due to exudation into the basement membrane, and not by surface exudation. The swollen condition of the upper eyelids was due

* In most cases an eruption is manifested, particularly on the quarters.

to the same cause, and not, as I had supposed, to infiltration into the superimposed areolar tissue. On opening the spinal and cranial cavities, the lumbar portion of the cord presented an intensely congested condition of its meninges, and a softening of its substance. A quantity of semi-gelatinous fluid escaped on opening the cavity; other portions of the cord were but slightly congested, as also were the meninges of the brain, with the exception of a portion about the size of a shilling on the posterior part of the left hemisphere of the cerebrum. The brain substance was apparently healthy. A microscopical examination of the blood revealed a considerable diminution in the quantity of red corpuscles, and the existence of numerous bacilli, which appeared to be possessed of protean properties, but mostly a crescentic moniliform arrangement was noticeable. The greatest number of these organisms exist in the lachrymal secretion; here, frequently, spirillum, and a peculiar stellate arrangement can be seen, as also is the case in the fluid which escapes on opening the spinal cavity. I have not yet met with such an arrangement in the blood. The first time I observed these bacilli was in a specimen of *post-mortem* blood, and I thought that they might be infusorial products; but subsequent examinations of fluids from the living animal have demonstrated that such is not the case.

I may here remark that numerous cases of Influenza have recently been under my care, and, after a diligent search, I have been unable to find bacilli in either the blood or discharge from the nostrils, obtained after the application of errhines. In one specimen *micrococci* were observable, but their existence might be accidental. These searches I intend to prosecute further, and shall report in these pages.

Experiments demonstrating the communicable nature of the disease:—

On March 2nd, at 7 a.m., I inoculated with blood an aged cart-horse, apparently healthy, pulse 34, temp. 100°. At 4 p.m., pulse 42, temp. 101⅘°; animal fed, and appeared in his usual health. At 10 p.m., pulse 50, temp. 102°. At 3 p.m., March 3rd, pulse 55, temp. 102⅘°. At 8 a.m., pulse 58, temp. 102⅘°. At 1 p.m., pulse 62, temp. 103⅙°. He now refused food, and appeared dull; the upper eyelids were a little

swollen and in a semi-closed condition; both pupils were contracted and distorted; he moved with difficulty. At 6 p.m., pulse 75, temp. 104°; previous symptoms much aggravated, and the crackling and quick flexing of hind fetlocks were now well manifested; urination was effected with difficulty, owing to the loss of power to adjust the limbs; action of bowels normal. I now put the animal under treatment, and a recovery was effected in six days. From this horse I inoculated another—this time using a tube of the "lachrymal" secretion instead of blood. In twenty-six hours all the characteristic symptoms were manifested, pulse 80, temp. 106°. I now commenced treatment, and ultimately a recovery was made, the maximum temperature being 106⅔°.

I then inoculated two guinea pigs, one with blood and the other with tears. In twelve hours the one inoculated with tears trailed one hind leg, the eyelids were almost closed. In sixteen hours the same symptoms were observable in the other. In twenty hours the former was quite paralysed and lay in a semi-comatose state (I now obtained tubes of blood and tears). The other guinea pig appeared in about the same condition. In twenty-four hours the tear-inoculated one was dying; the other appeared somewhat better, and in thirty hours drank some milk and on the second day was well. With a tube of tears obtained from the guinea pig, I inoculated a pony. In thirty hours symptoms of the disease were fairly manifested. The crisis was reached on the fourth day (pulse 102, temp. 106⅔°, commencing treatment), when a rapid recovery was made.

The period of incubation appears to be uncertain, and most probably, like its congeners, varies in proportion to the favourable conditions under which the infective media have been placed. Should the necessary conditions be in existence, I am of opinion that the disease may manifest itself in a few hours. In one case, I fancy a bucket of cold water acted as an exciting cause; the horse was observed to be off his feed and a little dull, but after partaking of the water, his coat was staring, slight rigor, and then followed the flexing of hind fetlocks, etc.

The *modus operandi* in the production of the disease I take to be thus—That it is due to a specific organism exerting its effects

upon the conjunctival mucous membrane of the upper eyelids, portions of the alimentary canal, the lumbar portion of the spinal cord and its meninges, etc.; its rapid accumulation in the blood producing a physical, and perhaps chemical alteration of that fluid, and in exceptional cases, I fancy, necræmia. The nervous system becomes suddenly prostrated. The partial loss of function in the lumbar portion of the cord (due to effusive pressure) may account for the symptoms observable in the early stage of the disease, viz., loss of co-ordination and swelling of hind limbs. The visceral congestion I take to be a result of sympathetic enervation; the capillaries losing their inhibitory function, the circulatory system is rendered in a most mercurial condition. As the disease progresses, the enervation is augmented by a morbid sensibility, want of nutrition, etc. The heart, though still under the influence of sympathetic morbid sensibility, derives less energy from the debilitated nervous system, and being also less nourished, has less power to contract, and really becomes weaker. The pulse is rendered weak also, though still perhaps wiry; and most probably from the same cause the brain and cord has its function more impaired, until actual stupor ensues. This will be indicated by the pulse becoming soft and weak. This is the stage when the greatest caution is required in the selection of remedies. In one notable case which came under my care, directly the head-collar was loosened the animal immediately fell backwards, and after lying a short time would with difficulty regain its feet; but a swaying to and fro was observable for a few minutes, when the acrobatic evolution would be repeated. Here, undoubtedly, cerebellum pressure was indicated.

The heart now being unable to empty itself, the pulmonary circulation is retarded, and there is a tendency to congestion, from the capillaries being deficient in power; the blood, therefore, not being purified, causes still greater stupor, and the greatest prostration ensues, the animal now mostly going down for the first time since being attacked (unless, as I believe is occasionally the case, neuralgic pains accompany the disease, when colic symptoms are manifested, which are apt to mislead). I may remark that I have not yet seen a case where the coma

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preceded the posterior immobility; thus pointing to a localisation of action, first upon the lumbar portion of the spinal cord—that action extending on to the brain. As the cervical portion of the cord becomes implicated, œdema of the fore limbs will be a result. The swollen condition of the limbs will be aggravated in proportion to the extent of the disturbance in the ganglia of the spinal nerves, thus implicating the function of the lymphatics, as well as the vaso-motor nerves in connection with other vessels.

As to the swollen condition of the upper eye-lid, and not the lower one, I can offer no other explanation than a specific partiality on the part of the factors of the malady for that structure. The opacity of the cornea, which is frequently noticeable, most probably is due to an extension of the morbid action into its structure, altering the arrangement of its fibrillæ: hence the opacity. The intensity of the fever will be governed by the extent of injury to the centres of the nervous system caused by the poisoned blood. As to remedial agents, the greatest care is required in their selection.

I have experienced the best of results from the administration of Acid sulphuric, hydrochloric, and salicylic. Ext. Conii, Tr. Cannab. Indicus, Sodæ sulphis, and Magnesia sulphas, when the bowels are torpid; and should a like condition of liver be indicated, a small dose of Hydrarg. subchlor. may be placed upon the tongue. The most important agent in the treatment of this disease is Iodine, introduced into the system by way of inhalation, either alone or with Camphor. The simplest method of administration is to heat a small piece of sheet-iron over a flame to the desired temperature, then holding it beneath the animal's head, place upon it the agent you wish to volatilise. The mineral acids should be given in the animal's drink: the hydrochloric is preferable, when biliary complications and diarrhœa exist. The indiscriminate use of stimulants in the early stages of the disease, particularly Carbonate of ammonia, which has had so much favour with practitioners in this neighbourhood, is evidently contra-indicated—the latter compound often producing diarrhœa, and always adding alkali to an already over-alkaline blood. No stimulants should be given until after the

crisis, unless there is threatening collapse. During convalescence, beer, Spt. æther, Nitrosi cu., Nux-vomica will be found of service, alternating with Liq. arsenicales and iron compounds. Should the paralytic symptoms "hang fire," apply mustard to loins, give Nux-vomica in full doses, and allow exercise and a liberal diet.

As to prophylactic measures, have all bedding burnt which has been in contact with affected animals, remove all cobwebs, throw water over walls, cleanse floors, flush drains, cesspools (if any) empty and lime: after which, thoroughly fumigate by burning sulphur. When the horses have been replaced, occasionally fumigate with Iodine, and give Sodæ sulphis, or mineral acids with drinking-water.

THE INFLUENCE OF HEREDITY AND CONTAGION ON THE PROPAGATION OF TUBERCULOSIS AND THE PREVENTION OF INJURIOUS EFFECTS FROM CONSUMPTION OF THE FLESH AND MILK OF TUBERCULOUS ANIMALS.*

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THE ideas we may entertain as to the nature of things are far from being immutable, but are being incessantly modified under the influence of the progress daily made in human knowledge, and more especially since the introduction into scientific studies of new methods and new means of analysis and research. The history of natural sciences in general, and that of the two medicines in particular, furnishes us with an evident proof of this fact.

Objects and processes of which beforetimes the existence could only be suspected, or the salient characteristics of which were only vaguely known, are now very often presented to us in

* This paper has been prepared for discussion on the subject of Tuberculosis, which is to take place at the International Veterinary Congress to be held at Brussels, on September 10th.

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a form very much more definite and precise, because intelligent workers have made them subjects of special research ; and very frequently, also, this new conception of things and of facts has been recognised as erroneous when mechanical, physical, and chemical investigation have been applied to their analyses.

After having submitted to these modifications—which were the necessary consequences of the facts unveiled by observation, as well as by chemical, physical, and mechanical analyses—the dominant ideas in medicine underwent a new and profound transformation when, under the impulsion of Bacon, the illustrious reformer of modern science, the methods of experimental research, which have only been recently accepted and introduced into medicine, were applied to scientific studies.

Physical, chemical, anatomical, and microscopical analyses, in revealing the nature of the primary figured elements, as well as the amorphous constituents of the different tissues, have given to the physician a power of discernment which he could not have attained so long as in his researches he was limited to unaided eye observations and comparative studies. By the new analytical methods he has acquired such an intimate knowledge of vital processes and their consequences, that he is enabled to differentiate the various morbid conditions and phenomena which, until recently, he had considered as similar or identical.

The experimental method adopted completes these various kinds of medical analyses, and permits us to discover that even in things and processes which, until recently, were confounded with each other, there yet exist notable differences.

To these different means of investigation, which have effected so much in medical progress, is to be added the knowledge, more recently acquired, of the infinitely minute organisms, and the influence they exercise on the processes occurring in the organic world. The discoveries relative to these microscopic beings and their mode of life, have made known the causes of many phenomena hitherto inexplicable, and permitted a clear distinction to be made between things before undistinguishable.

Finally, statistical studies have, in their turn, exhibited the extent to which diseases prevail in different countries, together with their degree of persistency, as well as sometimes indicating

the modes of propagation of those causes to which these maladies are due.

How many diseases, essentially distinct, were confounded with each other at a time when examination of the sick only allowed the physician to recognise the disturbances easily noted by the ordinary means of investigation? The time has not long gone by when we exclusively sought in the seat, the dryness or humidity of the diseased surface, and the course and termination of the affection, the bases of every classification of dermatoses; and cases are well within memory in which simple cutaneous affections were supposed to be due to, or allied with, internal diseases, though more or less modified in their course by the action of certain kinds of treatment; and it is not so long since the cutaneous localisations of an internal malady were mistaken for veritable dermatoses.

The minute study of the skin and its histological characters, has brought about a classification of dermatoses conformable to the demands of science; but it is only by a detailed study of the parasitic organisms that we are enabled to assign to certain among them the place to which they really belong in the nosologic list, and to determine the means by which we may rationally combat them.

Our knowledge with regard to diseases of the respiratory apparatus in general, and those of the domesticated animals in particular, left at other times as much to be desired as we have now acquired with respect to the affections of the skin. So it was that we kept apart, in classification, the diseases accompanied by discharge from the nasal cavities and those in which this feature was absent; and so it was that we confounded simple Rhinitis with Strangles (*Adenitis equorum*), disease of the frontal sinuses, dental fistulæ, catarrh of the trachea and bronchi, and that we classed it in the same group with these maladies, because of symptoms which were only the consequence of certain pulmonary affections, and others which were only the expression of Glanders accompanied by nasal discharge. This confusion was maintained until the moment when anatomo-pathological knowledge began to reveal the differential characters of these disorders.

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The anatomical, histological, and experimental methods have not only led to the differentiation of diseases which were hitherto confounded, or at least considered as similar to each other, but they have also shown that the same malady may manifest itself in different forms—forms which previously were supposed to indicate distinct diseases. As an instance of this, we have only to allude to Glanders and Farcy, which not very long ago were looked upon, in general, as distinct maladies, notwithstanding the advice of certain observant and experienced minds, who had already suspected at least the similitude or identity of the two conditions. This identity, nevertheless, has only been established in a positive manner since recourse has been had to anatomo-pathological researches and to experimentation. These researches have, in addition, led to the knowledge of morbid troubles which had previously remained unperceived or unexplained. While, beforetimes, the only typical manifestations of Glanders were the ulcers, "buttons," or tumours, as well as the tumefaction of vessels and lymphatic glands—to which were superadded, at a later period, pulmonary nodules—it is now recognised that the conjunctival cicatrices, and the glanderous and pneumonic lobular vegetations, may also be independent and primary manifestations of Glander infection.

Until serious anatomo-pathological researches were introduced into medicine, it was believed that glanderous lesions could only be found in the respiratory organs, in the lymphatic vessels, and in the skin ; but since then, and especially since recourse has been had to experimental investigations, it has been recognised that the lesions of the disease may be as fully developed in any other living tissue, even the bones not being exempt.

It was not without much surprise that clinicians were convinced that, in order to diagnose a glanderous disease, it was necessary to do more than merely examine the nasal cavities, the larynx, and the skin and subcutaneous tissue ; and that in addition to Glanders localised in the nasal cavities and the larynx, there was Glanders of the viscera, and even of the bones.

The discovery of the different forms Glanders assumes, explains how it was that for centuries the non-contagiousness of this malady was maintained, notwithstanding the numerous experi-

ments instituted with a view to establish its transmissibility. It is only since the different manifestations of Glanders were recognised, that veterinary surgeons, who were sanitarians, could provide the Legislature with more exact information as to the cause of this malady, and to prescribe the measures necessary to successfully combat farcino-glanderous affections.

The history of Tuberculosis, which is the subject of this work, resembles that of Glanders, especially in regard to the successive phases of that malady, the contradictory discussions arising as to its contagiousness, as to the identity of Glanders and Farcy, occult Glanders—latent or concealed—as well as the notable divergence of opinion with respect to the measures required to limit the propagation of this disease. The similarity in these two histories is all the more marked, when it is remembered that it was only at the commencement of this century that a physician of the French army, M. Lorin, had positively recognised the transmissibility of Glanders to man (zooanthroponosis), and that it is only since then that we are in possession of serious arguments in favour of the identity of Pulmonary Phthisis and Tuberculosis in the human species.

The disease which now occupies our attention is usually designated (on the Continent) Tuberculous Phthisis, or bovine Tuberculosis; though it is well known by a number of other names which reflect more or less the ideas prevailing at different periods, relative to the character of this affection, the extension of which is considerable, and the nature of which is still more or less unknown.

Animals affected with this disease have cough, and are generally emaciated. On opening their carcase, nodules are usually found in the lungs, either ulcerated or containing pus. As these lesions and symptoms are among those most frequently met with in the bodies of animals attacked by this disease, they have been the first to attract attention; and it is also probable that, for this reason, the old and popular names for this affection are Phthisis (Pining, Consumption, *English;* Schwinden, Schwindsucht, *German;* Phtisie, *French*), Cough, pulmonary ulceration (Wasting of the lungs, Lungen Schwärrung).

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ticus, chap. xxii. verse 8 *et seq.*); and Columella, in his De re Rustica (cap. xiv. lib. vi.), designates it under the name of "exulceratio pulmonis," the reference being as follows: "Ad exulcerationem pulmonis et ad tumorem palati atque cervicis; Est etiam illa gravis pernicies, cum *pulmones exulcerantur*, nide tussis et macies et ad ultimum *phthisis* invadit." The French expression, Phtisie pommelière, is no doubt derived from the same origin, as are also the German designations of "Lungensucht," and "Lungenfæule."

Keeping in mind the exaggeration in the venereal sensations (both with regard to their persistency and their intensity), so often observed in animals affected with this disease, it has also received such names as Nymphomania, Satyriasis (Latin), Satyriasis stiersucht, geile sucht, Monatseiterei (German), Ninfomanio, furore uterino (Italian), Brummel (Swiss), Bulling (English).

Because of the salient excrescences found on the serous and cutaneous membranes of diseased animals, the malady has been termed Hirsesucht, Meerlinsigkeit, Zäpfigkeit, Kramichtkeit, Rindshammen, Traubenkrankheit (German), Pearl Disease, Margarosis (Anacker), Knots, Kernels, Grapes, Angleberries, Clyers (Fleming, "Veterinary Sanitary Science and Police," London, 1875. Walley, "The Four Bovine Scourges." Edinburgh, 1879.)

The nature of these excrescences is still a matter of dispute. For many centuries they have been considered as of a syphilitic character, and have consequently received the name at first given to the human disease in several parts of the world—such as Franzosenkrankheit (French disease, *German*), Francausowitost pri Krawach (Bohemian), Lustsemche, Unreinigkeit, Venerie et Morbus gallicus boum (Latin). At a later period the nodules and nodosities were considered to be of a glandular nature, and the malady was then qualified as the Drusenkrankheit (German), Malattia Glandular (Italian).

Several *savans*, renowned for their anatomo-pathological knowledge, have endeavoured to determine the histologic texture of the neoplasms which are developed on the serous membranes during the progress of the malady. The earlier investigations made with a view to elucidate this point, gave those pathological

vegetations a sarcomatous nature; later, they were considered fibrous tubercles, and still more recently as neoplasms peculiar to the bovine species; while at the present time they are looked upon as veritable tubercles.

These different views of the neoplasms of bovine Phthisis have been the cause of giving yet more names to the disease, such as: Cachexia boum Sarcomatosa, Sarcomatosis Infectiosa, Sarco-tuberculosis, Tuberculosis Fibromatoa, Sarkomdyscrasia, Tuberculosis Pleuralis, Cachexia boum Tuberculosa (Tscheulin and Wagenfeld), Rindstuberkulose (Leisering).

As the disease is frequently met with in the pig, and nearly as often in bovines, in the form of Scrofula, it has also received this name, and that of Scrofulo-tuberculosis.

Most frequently it is known in France as Phtisie pommelière, and in Germany as Perlsucht, or Tuberculosis. The latter designation is most admissible, because of the relations of this bovine affection to Tuberculosis in man.

The two last-named designations have, no doubt, been chosen because one of the most salient characters of the malady consists in the appearance in the tissues of the diseased animal, of miliary nodosities, which, after having during a short period of growth attained a certain volume, degenerate, becoming caseous and calcareous. These nodosities differ from other analogous productions, *inasmuch as they are capable of being transmitted by inoculation to nearly all the domesticated animals, and their transmission gives rise to the production of new nodosities, which, analogous to those from which they were derived, may in their turn be successfully inoculated.*

Conformably with these characteristics, we might consider the designation of *Tuberculosis panzoötica contagiosa* as being the best of all those enumerated; though it may be remarked that if the nodosity is really the essential alteration in this disease, it is not the only one, and therefore is not the characteristic or pathognomonic lesion. So that although from an absolute point of view we give the preference to the last-named designation, we will nevertheless employ the term Tuberculosis (*Phtisie pommelière, Perlsucht*), because of its simplicity.

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The great number and diversity of the names given to this disease might lead us to suppose that it has often been confounded with others affections which have only a superficial resemblance to it, or have certain characters common with it.

To give only one example of this confusion, it may be mentioned that, until within the last few years, Echinococcus kysts have been mistaken for Tuberculous neoplasms, although so long ago as 1821, Tscheulin had drawn attention to the differences existing between these two lesions; and the same error has been made with regard to the *Cysticercus cellulosus.*

Apart from these grosser errors in diagnosis, there occurred others more excusable; for besides those parasitic creatures visible to the naked eye, there were others of microscopical dimensions which could also develop in the domesticated animals, and cause the formation of nodules and nodosities which, like the tubercular neoplasms, might undergo caseation or calcareous infiltration. Certain lesions produced by foreign bodies and enkysted in organs, might also be confounded with these neoplasms—the foreign matters most frequently belonging to the inorganic world, and arriving in one way or another in the interior of the living animal.

Not only have all these lesions been mistaken for those of Tuberculosis, but the alterations which are met with in chronic Broncho-pneumonia, Bronchectasia, abscesses and softening centres seated in the hepatised or sclerosed pulmonary tissue, as well as the lesions due to Pyæmia, or those belonging to some carcinomatous affection, have likewise been mistaken for the malady in question.

If the lesions of Tuberculosis have often been confounded with alterations which were perfectly distinct from them, it has been sometimes sought to separate the lesions of this malady, and to consider apart the alterations which are really an integral part of it. Thus it has happened that in Germany, Austria-Hungary, Switzerland, and England, certain authorities have described two forms of the disease—pulmonary and pleural Tuberculosis—which have been considered by them as quite distinct affections, and treated as such in their manuals of pathology and in legal arrangements.

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We may add that recent researches have discovered maladies which are now fixed as tuberculous, and the existence of which was previously ignored, or their manifestations were misinterpreted.

Taking all the circumstances into consideration, we need not be astonished at the numerous voids that still remain in the symptomatology of Tuberculosis, and it can easily be understood that the diagnosis of the disease is looked upon as very difficult, and even often impossible. Certainly the difficulties in the way of diagnosis are real; they are the consequence, in many cases, of the slow and insidious course of the disease, which sometimes lasts for years, and the phenomena of which often pass unperceived. And besides, as the morbid products of the malady may, in certain cases, be deposited in organs which, under ordinary conditions, would remain free from them—as in the brain, spinal cord, kidneys, genital organs—and produce special manifestations, it is scarcely possible to trace in a precise and definite manner all the symptoms which mark the presence of the disease in every case.

Similar difficulties in diagnosis are, however, equally met with in other disorders—as in the contagious Pleuro-pneumonia of bovines, and in Glanders. The first of these diseases has likewise a slow course, and we may affirm without much fear of contradiction, that a good number of cases of this malady escape detection; while with regard to the second, it is notorious that its progress and symptoms are very much varied; and yet, notwithstanding these somewhat unfavourable conditions as to diagnosis, the clinician is often able to determine the nature of these maladies, and eventually to recognise their existence.

The difficulties in diagnosing pulmonary Tuberculosis are, however, actually greater than in contagious Pleuro-pneumonia, because the differential diagnosis of the former has not attracted much attention, and also because the general tendency of medical men towards anatomo-pathological researches, which has been so notable in recent times, has somewhat led to the neglect of observations and clinical investigation with regard to these two diseases.

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The establishing of a precise diagnosis being of the greatest utility, and being as indispensable for those who are engaged in practical medicine as for those who are occupied with veterinary sanitary police, a knowledge of the means of diagnosing the disease should be considered as the primary, and one of the most important tasks imposed upon those who occupy themselves with practical or theoretical medicine, or even the natural sciences only.

If we recognise the voids which medical knowledge offers us in this respect, we, nevertheless, cannot ignore the considerable progress which has been the consequence of the great improvements introduced into medicine by Laennec and his disciples. *Vivat sequentes.*

The following is extracted from an excellent description of the disease, dated 1840, and published in an Ordinance of the Canton of Appenzell-Unssenbden of that year :*—

"Cough short, interrupted, and dry; most marked in the morning, at the time of feeding, and (most frequently) after a few violent movements. At the commencement of the disease, the animals are frequently still in a state of average plethora, and they may, if food is good and abundant, acquire a certain degree of obesity. If the malady progresses, the animals become more and more wasted, and the symptoms which mark a nutritive change become more evident. The hair becomes erect, dull, and matted ; the skin looks dirty, is tender, and clings to the bones, appearing very pale at the parts little covered with hair, as in the perineal and mammary regions; the temperature of the body descends below the normal standard; the eyes sink in the orbits, as the fatty cushion at the back of the eye disappears, and look as if drowned in water; the gaze is dead ; the cough at this time is more frequent than previously, but it is seldom, if ever, accompanied by nasal discharge. The vital turgescence of the tissues becomes less and less marked ; the patient wastes more and more, notwithstanding the preservation of the appetite and an abundant and good supply of food.

"Coincidently with these symptoms, the mammary secretion

* Archives Suisses de Medecine Vétérinaire. New series, Vol. VIII., p. 369. Zurich, 1846.

becomes almost insignificant in milch cows. Sometimes the patients exhibit an abnormal sensibility on pressing the breast and lateral parts of the chest; this sensibility, which is sometimes present from the very commencement of the disease, is much more frequent and pronounced at a more advanced period, and is denoted by groans, attempts to evade pressure on the diseased parts, cough, etc.

"The malady may nevertheless be present without any symptoms being noted.

"The animals which, notwithstanding the existence of the disease, may fatten well, are in certain countries known by the name of *fette Francosen* (fat French beasts).

"It sometimes happens that with diseased animals there are manifestations of Nymphomania. In these cases it is observed that in a cowshed there are signs of restlessness and agitation in one of the cows. If it is eating, it suddenly ceases to do so and fixes its eyes on any one who may have chanced to enter the stable; it paws the ground and often bellows; stretches out the head and neck; the eyes appear to start from their orbits, and it looks as if it would fly to attack the visitor who has provoked these indications. The labia of the vulva are usually tumefied, and very sensible to the touch; the clitoris is very developed; the vaginal mucous membrane is congested and violet in colour; the sacral and ischiatic ligaments, as well as the connective and aponeurotic tissues covering them, are, as in the skin of these regions, relaxed to such a degree that the lateral parts of the sacrum and the tissues of the ischial region of the pelvis appear to be more or less depressed or subsided (*abig'heil*).

"These tuberculous nymphomaniac cows exhibit, besides, venereal manifestations which differ from the ordinary phenomena of the organism, by the moment when they appear, by their intensity, and by their persistency, notwithstanding coition having taken place.

"With these animals the venereal desires are evidenced by inquietude, indocility, a great desire to jump on other animals, and a considerable flexion of the croup produced on touching this region. Animals affected with the disease in this form give very little milk and rarely fatten well."

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The manifestations of Nymphomania are not specially indicative of the presence of Tuberculosis, however but may present themselves in the course of other affections.

For instance, Stirmann* observed them in certain cases in which the ovaries of the patients were affected with alterations different to those of Tuberculosis.

Ryghem† reports the clinical manifestations of Tuberculosis as follows:—"The young animals attacked by the disease do not profit, like the other animals, from the food they receive, but appear to remain behind those of the same age, and fed in the same way, so far as nutrition is concerned. Animals of a certain age visibly pine away from day to day, and soon fall into a state of marasmus. From time to time during the day they emit, under the influence of various causes, a short, feeble cough.

"Notwithstanding the exhibition of the most effective expectorants, this apparently catarrhal affection does not 'ripen,' as we may say—that is, the cough does not become deeper or softer.

"The owner may, in such a case, doubt the existence of Tuberculosis; there is, consequently, need to examine the animal carefully and minutely.

"If pulmonary Tuberculosis is present, it will be observed that the movements of the ribs and wings of the nostrils are effected when the creature is in a state of repose, without any marked disturbance unless the disease is in a very advanced state. But if the cow is compelled to walk a little quickly, there ensues dyspnœa and laborious respiration.

"In those cases in which the alterations of pulmonary Tuberculosis are not so advanced, this dyspnœa will scarcely be noted during repose: but it becomes evident, and even so pronounced as to assume the abdominal character, if the pleura is invaded by the disease. In the latter condition, there is more than ordinary sensibility exhibited on pressure, more especially above and behind the shoulders, along the back, and in the costal region.

"The localisation of Tuberculosis on the pleura is rendered evident by the dull sound yielded on percussion, while this mode of exploration only furnishes the vaguest indications in those

* Archives Vétérinaire de la Suisse. Nouvelle Séries. Vol. XI.
† Zeitschrift für Thierheilkunde, 1845.

cases in which the localisation of the morbid process has taken place in the pulmonary parenchyma.

"On auscultation of the chest, there are discovered in these cases, and in certain places, an altered respiratory murmur, an abnormal *bruit*, most readily perceived when the chest of the diseased animal is auscultated and the sounds compared with those of the lungs and pleura of a healthy animal."

The *bruit* which is heard in auscultating the thorax, and sometimes even the abdominal wall, in cases of pulmonary Tuberculosis, is produced by the friction of the vegetations, of which the peritoneum and pleuræ are the seat. In Germany this bruit is designated by the terms *Perlreiben* or *Perlschaben*. Dr. Vogel,* in giving a classical description of it in a treatise on pathology, has provided clinicians with the means of distinguishing between Tuberculosis and Contagious Pleuro-pneumonia. He says:—

"1. The sound furnished by percussion of the thoracic wall of a phthisical animal is not an empty sound, and in percussing its chest we do not perceive that resistance which percussion gives in cases of Pleuro-pneumonia.

"2. The dead sound is only produced in percussion in an animal affected with Phthisis, at the points corresponding to the nodosities.

"3. In this disease the absence of respiratory murmur and bronchial souffle is most frequently only remarked in circumscribed regions.

"4. Finally, auscultation of animals which are not phthisical does not reveal the cavernous and metallic sounds sometimes noted in Tuberculosis."

"In Phthisis evident friction sounds are only met with when the nodosities are tubercular, and have already undergone calcareous infiltration.

"In order to hear this abnormal *bruit*, the affected animal should be placed in a very quiet place, fasting, after having undergone moderate exercise, and care should be taken to apply the ear to the diseased region.

"The friction sound perceived in Phthisis is characteristic, and

* Lehrbuch der Physikalischen Diagnostik. Stuttgart, 1874. Wochenschrift für Thierheilkunde und Viehzucht, 1873. Nos. 10, 11.

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differs from the friction sounds of Pleurisy and those of the rumen, inasmuch as—

"1. The Pleurisy sound is not persistent, and disappears when the exudate becomes abundant; it reappears when absorption takes place, and then usually with greater intensity than at the commencement;

"2. In Phthisis the friction sound persists, and is not heard over such an extensive surface as in Pleurisy;

"3. In Pleurisy the friction sound is more marked than in Phthisis, and resembling the sawing or rasping *bruit.* If Pleurisy co-exists there is fever present;

"4. As a general rule, it suffices to place the hand on the thoracic wall in order to perceive the pleuritic friction sensation, while percussion in Pleurisy demonstrates that the production of the dull sound is limited by a horizontal line;

"5. The pericardiac friction sound is isochronous with the pulse; that of Phthisis corresponds to the movements of expiration and inspiration;

"6. In order not to confound the friction sounds of Phthisis with crepitant *râles*, it suffices to make the animal cough, or give it water to drink; in the latter case the *râles* most frequently disappear, and the production of other *râles* is momentarily suspended;

"7. The existence or non-existence, as well as the characters of the movements of the gastric apparatus, permits a distinction to be drawn between the friction sound of Phthisis and the *bruits* produced in the rumen."

All these latter indications do not constitute a complete and characteristic symptomatic *tableau* of Phthisis.*

It results from the experiments as carefully made on animals as possible, that the commencement of this disease is marked by slight febrile reaction, accompanied by rigors and heat, anorexia, indigestion, and abnormal coloration of the mucous membranes. In general, these symptoms disappear after a few days, and at

* Mr. Martin, M.R.C.V.S., Rochester, read an able paper before the Southern Counties Veterinary Medical Association, which was published in the VETERINARY JOURNAL for November, 1881, on "Some of the Differences between Contagious Pleuro-pneumonia and Tuberculosis, from a Sanitary Point of View," in which some of the differential symptoms of the two disorders are clearly given.

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the same time there is developed a sensitiveness and abnormal tumefaction of the superior, middle, and inferior cervical lymphatic glands, as well as those situated at the entrance to and the lower part of the chest, as also sometimes those of the axilla. These glands at a later period become hard and nodular. At a more advanced period of the disease, there is again slight fever, which is manifested by accesses or remittances, and the existence of which may be readily ascertained by employing the thermometer. The evening temperature, in some cases, reaches from 102·2° to 105·8° Fahr., while in the morning it is often very low when the disease is advanced, descending perhaps to 98·6° Fahr.

The urine is usually neutral, sometimes albuminous; it contains a somewhat unusual proportion of salts, especially after the paroxysm which often sets in during the course of the febrile reaction.

Usually the milk derived from phthisical animals does not offer anything unusual at the commencement of the disease, but as soon as emaciation and fever supervene, the secretion is diminished in quantity as well as altered in quality. It becomes bluish in tint and richer in salts than usual; though this modification is not invariably related to a marked decrease in quantity.

Lessen* reports the case of a cow affected with Phthisis, and which was apparently in good health until five to six years of age. It yielded in milk from

Jan. 24, 1866,	to Jan. 23,	1867	...	2,325	litres
„ 1867	„	1868	...	2,725	„
„ 1868	„	1869	...	2,025	„
„ 1869	„	1870	...	2,168·75	„
„ 1870	„	1871	...	2,162·50	„
„ 1871	to Dec.	1871	...	1,658·50	„

The analyses of milk derived from phthisical cows prove that it has a very variable composition, a circumstance which might be anticipated.

Diseased cattle sometimes manifest dysphagia, ordinarily due to tumefaction of the cervical lymphatic glands, as well as a capricious appetite, intermittent tympanitis, and constipation alternating with diarrhœa and colic, without any ascribable

* "Wochenschrift für Thierheilkunde und Viehzucht," 1872, p. 346.

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cause. In other cases there is a permanent or intermittent nasal discharge of a mucous, purulent, or sanguinolent character.

In certain exceptional cases, the expired air and the nasal discharge exhale a fœtid odour. Sometimes one or other of the costal parietes is more or less depressed and wasted; in other cases, during the course of the disease there are very limited muscular contractions, cramps, paralyses, with tonic contraction of the muscles of the neck, epilepsy, turning round, coma, or blindness. In yet other cases, there supervene during the progress of the malady, tumefaction and increased sensibility of the testicles or scrotum, Hydrocele or Mastitis—the latter invading sometimes the entire organ, sometimes only one-half or one-quarter, and terminating in nodular neoplasms. Another complication of this malady is swelling of the bones without external lesion, with caries, lameness, articular tumefactions, and the formation of certain warts. These manifestations will be again alluded to.

The course of the disease varies greatly, the symptoms either developing rapidly or tardily, and their manifestation is maintained during the whole period of the malady, or they are intermittent. The disease may, in every case, be classed among those of a chronic nature, and especially among those which continue as long as the normal life of the animal itself. In certain cases, however, it passes through its different phases in the space of three months, and sometimes even less. It at times follows an *insidious, concealed,* or *occult* course, and either escapes observation or is recognised tardily; and it only causes death rapidly and immediately if its morbid alterations are very extensive, or if they are localised in important organs.

Phthisis may co-exist with other maladies, or it may lead to the production of disease—as Pleurisy, Pneumonia, Bronchitis, Peritonitis, Hæmaturia, etc., so that the morbigenous agent of Tuberculosis does not protect the organism from the influence of any other morbid cause.

If, as appears from what has just been stated, Phthisis may present itself under very various manifestations, it is none the less established that an observant proprietor will quickly recognise the disease among his stock. He will notice that one or other of them is duller than usual, that its appetite is diminished,

its skin has lost its suppleness, and the hair its smooth, glossy aspect of good health.

The animals least affected feed well, but do not appear to profit by their food; they are easily fatigued, cough, and gradually present more and more numerous morbid manifestations. The owner or breeder generally takes good care to get rid of these animals, even when he is not completely certain as to the real nature of the malady with which they are affected; and he does this all the more readily as the cows often do not breed, or else have a great tendency to abort if conception does take place. If, however, the animal is a milch cow, it will probably be sold to a dairyman. Oxen, young animals, and bulls, are, in these cases, attempted to be fattened, and then sent to a slaughter-house in one or other of the large towns. The cows which do not give milk, as well as those which will not fatten, are slaughtered, and their flesh is sold for local consumption, or manufactured into some form of food; though not infrequently it finds its way into the sheds of poor farmers or others, to be fed for the market.

If, therefore, the attentive breeder or intelligent cowman can recognise this disease, and appreciate it at its just value, so that he is able to separate phthisical animals as soon as possible from his stock, it may be admitted that the veterinary surgeon, armed with all the mechanical resources of his art, for the exploration of the exterior (and interior) of diseased creatures, in the form of stethoscope, pleximeter, measuring tape, mirror, weighing-machine, etc., and with the advantage of being in a position to examine them by rectum or vagina, should be competent to diagnose the presence of the disease in the great majority of those attacked by it.

If our knowledge with regard to the means by which to combat this malady has made but little progress, the cause for this may be found, in great part, in the idea which is largely entertained that it cannot be recognised during life—an idea which we believe to be baseless, although it is held by a great number of veterinary surgeons. It is not proper that veterinary surgeons should continue to shield themselves behind this certificate of insufficiency or incapacity. Our knowledge of its symptomatology is not more advanced in this disorder than in many other maladies; and,

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besides, the discovery of the contagious principle of Tuberculosis should lead to the hope that we shall soon be able to recognise the existence of the disease by the detection of its cause alone. This new means of diagnosis will probably permit us to discover Phthisis in cases in which the nature of the affection cannot be otherwise determined, and aid us in elucidating certain points still obscure or unknown in its pathological history.

(*To be continued.*)

SPONTANEOUS VACCINATION.

BY A. SPREULL, F.R.C.V.S., DUNDEE.

SOME time ago the cows at L—, a dairy-farm in the neighbourhood of Dundee, were found to be suffering from an eruption on the teats and udder, which caused a considerable degree of trouble during the process of milking.

By the time my attention was called to the matter some of them had gone through the entire process, and had quite recovered. Others were still in the midst of the eruptive stage of the disease, and on the remainder the vesicles had not yet made their appearance.

In size, the vesicles were so small that at first I rather doubted if I had to deal with a genuine attack of Variola Vaccinia. In the majority of the cases their size and general appearance very closely resembled the characteristics displayed by the eruption in an attack of Small-pox in man; but I was not long to be left in doubt at this time as to their true nature, for a few days later M— S—, one of the dairymaids in attendance on them, who, unfortunately for herself, had at the time very badly chapped hands, began to show signs of having become inoculated, and in due time produced a beautiful crop of vaccine vesicles, fifteen in number, on the right hand and arm,—at once and clearly proving the correctness of the opinion I had arrived at so hesitatingly on that, as in similar outbreaks on previous occasions. Unlike what had taken place on these occasions, when, for want of some such confirmatory evidence, I was left unable to confirm my diagnosis, I had now before me one of the most complete and unquestionable demonstrations of its nature possible.

M— S— had been successfully vaccinated during infancy, and was now a young woman of about twenty years of age; so that the effects of the first operation had evidently, in her case, lost their protective power, and left her again liable to the disease when re-exposed to the action of the Small-pox poison, thus proving the necessity which exists for repeatedly undergoing the operation of vaccination, in order to keep up that complete immunity from attack so desirable in regard to the more virulent epidemic.

The vesicles gradually matured, and proved to be quite characteristic of the disease, many of them being half an inch in diameter, with the usual umbilicated centres and everything else complete; assuming all the usual features of blackening, scabbing, and desquamation during the process of healing, as with the ordinary vesicles produced by the operation of vaccination.

Thinking, therefore, that this matter would interest some of our local members of the sister profession, I mentioned the case to Drs. Millar and Sinclair, of this town, who expressed a desire to see the dairymaid, in order to satisfy themselves as to the genuine character of the disease. I accordingly sent for her, in order to allow them the opportunity of verifying my statements, and when she arrived in town, both doctors felt much interested in the occurrence, and at once concluded that it was a genuine case of spontaneous vaccination direct from the cow. So large a surface of the hand and arm was affected through coalescence of the areola surrounding the several vesicles, that the girl had to give up work for over a fortnight, until the effects of the disease had somewhat subsided in the part, and the vesicles had begun to heal over, which they did in the usual way; though probably, owing to the extent of the parts affected, the large number of the vesicles, and the consequently larger development in them of the virus of the disease, the healing process was more tedious and protracted than usual, with a similar degree of inflammatory action, resulting from a more limited number of incisions made during the act of vaccination.

As to the origin of the outbreak among the cows, there was nothing to account for it, so far as we could make out. Probably, however, some one of the recently purchased cows might have been brought from an infected place, or been in contact with

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the virus of the disease in some way previous to purchase ; and as they are always being exchanged in a large dairy like this, where about forty cows are usually kept, and where it is imperative that a large, uniform, and perennial supply of milk be always forthcoming, it becomes absolutely impossible to trace the history of the different animals. At all events, there were no cases of Small-pox at the time in the neighbourhood, so far as was known either to the farmer or myself, so that there was no chance of the cows becoming infected through contact with a small-pox patient while on the premises in which they now stood ; nor did more than one of the girls become inoculated, nor was the disease spread beyond the place in which it had manifested itself.

The fact that it did not extend beyond the cows and the case above mentioned proves conclusively that the vaccination of all the other milkers, etc., who came into contact with these animals, still retained sufficient efficacy to enable them to resist the attack of the disease.

Judging from what I have seen of Variola in this locality, I am inclined to think that it is a much more prevalent disease amongst cows than is generally supposed ; and when we take into consideration the fact that it is, as a rule, of a very mild type, and that, except amongst cows, it is rare indeed that we ever see it at all—together with the other fact that all, or almost all attendants upon animals, are now, through the effects of the compulsory Vaccination Act, protected against the effects of contact with the virus—it is not at all to be wondered at that so few cases of spontaneous vaccination occur ; and that, consequently, the outbreaks of Cow-pox which take place from time to time call for so little attention, and are taken so little notice of, even by the attendants. Without some such accidental occurrence as that recorded in the foregoing passages, the attack passes off, as a rule, without any comment from the farmer or dairyman, except that his "cows' teats are troubling them just now," or some trivial remark of a similar kind ; and it is very rare for either the one or the other to seek professional aid and skill for them. Consequently, these cases do not come so frequently under our observation as they otherwise would do, and hence it is that so few outbreaks of this disease are recorded.

DO HORSES RECOVER FROM GLANDERS?

BY J. J. MEYRICK, F.R.C.V.S., C.B., INSPECTING VETERINARY SURGEON, WAR OFFICE.

THE following ideas upon the subject of Glanders are doubtless unorthodox; but I venture to offer them for publication in the VETERINARY JOURNAL, in hopes that they may provoke discussion amongst the members of our profession, and perhaps induce some of them to try experiments which may have important results.

The almost universal belief connected with Glanders is, that it is incurable, and that, although the disease may exist in a subacute form for months, if not years, it is liable at any time to become sufficiently acute both to destroy the animal originally affected, and to communicate itself to others in a virulent form.

For many years past, when engaged in suppressing outbreaks of Glanders in India, and also during the present year in Egypt, I have found that, while some horses have decided symptoms necessitating their immediate destruction, others in the same corps, both during and after the first appearance of the disease, are found with only a trifling discharge from one or both nostrils, and a slight enlargement of one or both submaxillary glands, which are sometimes, but not always, attached to the jaw-bone. These horses having been isolated, some of them, after several days or weeks, have shown undoubted signs of Glanders; while others, without any treatment, have been restored to apparent health, and have remained in that state after rejoining their corps.

The latter cases are usually considered to have been only Catarrh; but it seems to me very doubtful if this view of them is correct.

During the past year several batteries of artillery and a company of commissariat were picketed three miles from Cairo, upon a sandy plain, of which one part had been previously occupied by an Indian regiment of cavalry infected with Glanders. I thought it impossible that the vitality of the virus could remain undestroyed upon loose sand, after months of exposure to wind and a hot sun. Nevertheless, a battery which was picketed by the side of—not on—the place in question, three

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months after the cavalry had gone, became affected with the disease. Two horses were decidedly glandered, and several others had swellings of one or both submaxillary glands—in two cases with vesicles upon the Schneiderian membrane. These burst, but instead of forming ulcers they quickly healed, leaving scars with elevated margins, which remained unchanged in size or appearance. After two months I caused one of the horses so affected, an old animal, to be destroyed. The cartilage under the scars was thickened over a surface about a quarter of an inch in diameter, but no miliary nodules or other signs of disease were found in the internal organs. The submaxillary gland had been gradually becoming smaller, and all discharge from the nostril had ceased for some weeks before the horse was shot. When I left Egypt, the other animal still remained isolated, with a very slightly enlarged gland, and the scars on the membrane unchanged, but with no other symptoms of disease. All the horses which were isolated on account of swollen gland and discharge only, had long before recovered, and returned to their duty.

What conclusion should be drawn respecting these and the many similar cases which have occurred during outbreaks of Glanders in India? That they were not ordinary Catarrh may be inferred from the fact that the horses and mules of all the other corps have remained free from that disease, although picketed within a few hundred yards upon the same plain, and therefore subjected to the same atmospheric influences. To me it seems probable that either the Glanders germ may, under certain circumstances, fall upon the Schneiderian membrane and produce swollen gland, discharge, and even vesicles, without being absorbed into the system; or else that the virus may be so weakened as to be capable of producing actual Glanders, in a form sufficiently mild to allow of the patient recovering spontaneously. We know, from the labours of M. Pasteur and others, that disease germs become weaker the longer they are exposed to the action of oxygen and sunshine; and all the cases similar to those above described which I have seen, were amongst horses kept in the open air in hot countries. If they were really cases of Glanders, the following questions remain for solution:—

1. Would the discharge from the nostrils produce the disease in an equally mild form if introduced into the system of healthy horses?

2. Would horses so inoculated be protected from the fatal forms of Glanders?

The results of M. Pasteur's experiments give us grounds for hoping that this may be the case, and I would gladly endeavour to prove that it is so; but I confess that the idea did not occur to me until after the horses at Cairo had recovered.

CASES OF HEART DISEASE.

BY ALFRED BROAD, F.R.C.V.S., LONDON.

THE following records are offered for publication, as an accompaniment to the paper read by me at the July meeting of the Central Veterinary Medical Society. Many other notes of cardiac affections will be found in the pages of the veterinary monthly literature; but for their bearing upon the subject, I would direct attention to two cases, one of Endocarditis, reported by my friend Mr. Alfred Withers, in the *Veterinarian* for April, 1868; the other of Carditis with Endocarditis, which I sent to the same periodical in April, 1870.

CASE I.—*Endocarditis—Rupture of Auricle.*

Subject.—Bay van horse, of heavy build and in full condition, eight years old. On the 2nd October, 1882, he was seized while at work with the first of three similar attacks; he remained under treatment for three weeks, and was then put to work, the second attack following in twenty days; a further period of three weeks was taken up with rest and treatment, and the third seizure occurred after he had again been at work about a fortnight. The symptoms shown were, on each occasion, nearly identical. While drawing his load at a distance from home, he suddenly stopped, and could not for some time be induced to move, exhibiting extreme distress, hurried and violent respiratory efforts, drooping head, and epistaxis. After being walked home with difficulty, the respiration continued most rapid and laborious, epistaxis frequently occurred, and the pulse was from 100 to 120

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per minute, the heart beating irregularly and violently. The temperature was 104° soon after the onset of the first attack, 103° on the subsequent occasions; but it rapidly subsided to almost the normal rate, and it was noteworthy that the respiration became tranquil in about three days from each time of attack, though it remained at the rate of sixteen or twenty for about a fortnight. At this period the pulse was forty-eight, and although the horse fed well, and was in exceedingly high spirits, the action of the heart remained excitable, and its beatings sank to no lower a rate than forty-six. The heart impairment had been especially evident during the last two illnesses, and it was determined to employ him in his present work no longer; but on the 13th January, while at exercise, he suddenly staggered and dropped dead. A rupture about two inches in length existed in the wall of the right auricle; the four cavities were empty, and in the pericardium was a mass of clotted blood distending the sac. The endocardium of the left ventricle was discoloured in patches, and the mitral valve segments had undergone much change, being excessively thickened and fleshy, also somewhat reddened, their membranous character being entirely lost.

A cloudy condition of the endocardium extended into the left auricle. Entangled in the musculi pectinati in this cavity was a small fibrinous clot. The wall of the right auricle was softened. Freed from all surrounding tissue and structures, the heart weighed seventeen pounds and a quarter. No clot existed in the pulmonary artery or its branches.

CASE II.—*Endocarditis—Pericarditis. (From notes.)*

Subject.—Bay carriage gelding of advanced age.

August 8th, 1882.—He had frequently of late stopped suddenly while at work, and refused to proceed, appearing distressed.

Present symptoms:—Pulse 70 to 80, extremely irregular; respiration 20; slight cough; appetite good. Mustard was applied over the heart, and, with other medicines, Digitalis was administered.

August 15th.—Pulse 60, regular; respiration 16. As this state of things remained unchanged for a fortnight, medicine was discontinued. The horse was apparently well, was fresh and ate

heartily, but on his third trial in harness the original difficulty showed itself as badly as at first. He was destroyed on the 11th October.

Autopsy.—Lungs pallid, several patches of lobular hyperæmia; heart hypertrophied; freed from all fat, lung tissue, pericardium, and adjacent glands, its weight was thirteen pounds. About a pint of clear, reddish-yellow serum, was found in the pericardial cavity. The pericardium covering the auricle had a sodden, flocculent appearance. The endocardium in the left ventricle was highly congested in patches, as was some extent of the muscular tissue beneath, and most especially apparent was the fibrous thickening of the mitral valve segments.

CASE III.—*Endocarditis.* (*From notes.*)

Subject.—An aged grey cart mare in good condition.

November 10, 1881.—Fell while at work; was taken home; rested, and received a physic ball.

November 13.—Tremors, pulse very irregular and fluttering; counted with difficulty 76 to 80; temperature 105°; no appetite.

November 15.—Temperature 101⅘°; appetite improved; urine thick and dark-coloured.

November 17.—Heart beating tumultuously 100 times in the minute; pulse at submaxillary artery about 80.

November 20.—Great difficulty in counting pulse; force and rate extremely irregular; average beats at arm 90; at the jaw they appear less; heart pulsating rapidly and violently at the rate of 105; second sound absent; temperature 101°. Appetite less; difficulty in swallowing; discharge of ropy saliva; cough; anxious countenance; urine still very thick; irregular regurgitation.

November 21.—Expression easier; radial pulse 72; heart beating irregularly 118; respiration 14; no cough or anginal symptoms.

November 22.—Heart beats 108; radial pulse 72 to 80; respiration 12; irregular pulsation less.

November 25.—Appetite good; no apparent pain or uneasiness; slight swelling of legs; heart beats 100, less forcible; pulse at artery 72. Urine thick and yellow; on the addition of

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nitric acid much gas was evolved; it became clear when heated; no deposit when boiled. Digitalis in twenty-grain doses has been given for four or five days.

November 27.—Mare apparently well; pulse about 72; the heart beats the same in number, more regular, and not so forcible. Urine clearer.

December 1.—Mare exercised; after half an hour, extreme exhaustion set in, with profuse perspiration; on her return to stable she lay down and evinced pain; also much tympanitis and flatus *per ano.* Pulse weak, about 80. Urine thick, and coffee-coloured.

December 3.—Improvement. Pulse at heart and arteries 68; no jugular reflux. Exhaustion after exercise.

December 5.—Pulse 66, regular and soft. Temperature 100°. Appetite good, and urine normal, pale in colour.

As the mare now improved daily, my notes cease. She was sold shortly afterwards.

CASE IV.—*Endocarditis, Hypertrophy, Pleurisy, Hydrothorax.* (*From notes.*)

Subject.—Grey omnibus mare, six years old.

January 22, 1870.—For a few days previous to date the mare has been in the stable, receiving febrifuge medicine, and has had mustard applied to the sides to relieve apparent pulmonary oppression.

Present Symptoms.—The mare feeds moderately well, and is lively; temperature nearly normal; visible mucous membranes of natural hue; respiration little disturbed; slight cough. Beating of heart 150, very violent, and audible; pulse at jaw indistinguishable; marked venous pulsation up both jugulars as far as the maxillary space; extremities cold.

January 24.—Jugular reflux less forcible; pulse at jaw 70.

January 25.—Mare better; heart's action more subdued, though rapid; arterial pulse 64.

January 31.—Mare apparently well; returned to work in a day or two.

February 7 to 12.—Grey mare attacked with Influenza, which was prevalent; no cardiac disturbance manifested.

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April 5.—Return of illness; sharp pains; looking at sides, hurried respiration.

April 7.—Saw her, and noted the following symptoms:—Mare feeding, apparently at ease; breathing normally, but the heart beating wildly as before, 164 times in the minute. Forcible jugular pulsation at each beat.

April 8.—Appetite good; slight cough; jugular pulsation much less; arterial pulse 52, soft and distinct; the beatings of the heart cannot be numbered, and there is a quick fluttering sound most clearly heard in the upper thoracic region.

By the 13th April the mare had recovered sufficiently to be put to light work, but a relapse occurred on the 19th.

April 20.—Mare in great pain; arterial pulse 82 and feeble; heart beats 156; breathing a little hurried; jugular pulsation distinct and forcible.

April 22.—Mare easier; feeds better; heart beats 140; pulse 48. Gradual improvement now took place, till on the 30th she went to work, and continued at her regular duty for several months.

November 23rd.—The grey mare has been laid up for several days. *Present symptoms:*—Impaired appetite; pulse 56; hurried breathing; on the least exertion the pulse rises to 80 or 90, the heart beating violently. There is manifest exhaustion, and the expiration is accompanied by the double effort significant of Hydrothorax. Effusion is present in the cellular tissue of the breast.

November 24th.—Mare slaughtered. Intestines and abdominal viscera healthy, with the exception of the liver, which was affected with much fatty degeneration; microscopically examined, fat cells were seen in abundance. Lungs hyperæmic in patches. Pleura pulmonalis studded with granular earthy deposition. A quantity of serous exudation of a dark yellow colour was found in the thorax. The pericardial sac contained a small quantity. The heart was very large, hypertrophied, with dilatation, and weighed 13½ pounds; a quantity of fat existed in its structure, but no sign of inflammation. (Seven months, however, had elapsed since the cardiac attacks.)

CASE V.—*Subacute Endocarditis—Valvular Disease.*

Subject.—Brown carriage gelding; aged.

November 20th, 1882.—Has several times lately stopped

suddenly while at work, shown distress, inability to proceed, and epistaxis. Pulse 60, irregular, and intermittent in the most marked degree; the heart for a second or two beating forcibly, then with feebleness, now hurriedly, then with long-drawn effort, the intermittent action causing a suspension of sometimes one contraction, sometimes two or three. The manner of the heart's action was very apparent on auscultation, but murmur was not easily distinguished.

The condition of affairs was not greatly improved by rest and treatment, and the horse was sold in the hope of his doing some farm work.

CASE VI.—*Pericarditis.*

Subject.—Bay carriage gelding of heavy breed, six years old. Period of illness, November 3rd to December 12th, 1882.—On the day following his purchase he fell ill with cold and cough, and developed a severe attack of Broncho-Pneumonia. That this was complicated with Pericarditis was soon suspected, from the peculiarly perturbed action of the heart; though during the critical period of the illness auscultation was only put in practice through the breast, in consequence of the continual envelopment of the chest with hot packing. As the lung symptoms lost their intensity and peril, the cardiac mischief made itself clearer. On applying the ear to the hollow of the breast, a peculiar sound, occasionally heard, caused me to suspect pericardial effusion. The pulse remained for days at the rate of 48, somewhat irregular in force and rate; respiration was a little oppressed; the horse frequently sighed. The hind legs, from the thighs downwards, the sheath, and the cellular tissue below the abdomen, exhibited an enormous amount of dropsical engorgement. Improvement followed the administration of Iodide of Potassium, but the most striking amount of benefit in the latter stage of the case resulted when Nitro-muriatic acid was given; for there were signs of much derangement of bowels and liver. (I have alluded to the fact of the patient's very recent passage from dealer's treatment.) These symptoms were an exceedingly irritable eruption on the quarters and tail, most offensive odour of fæces, excessive and constant flatulence with the same offensiveness, and a propensity to eat his fæces on every opportunity.

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Editorial.

THE EXCLUSION AND SUPPRESSION OF CONTAGIOUS DISEASES.

THE important discussion on Foot-and-Mouth Disease in the House of Commons on July 10th, which resulted in a strong Government being placed in a minority, marks a great stride forward in popular opinion as to what should be done in order to get rid of the more harassing and damaging of the contagious diseases of animals. This serious subject has been looked upon for far too long a period from a party, political, or class point of view, and stump orators, advanced radicals, and those who patronise the so-called "working man" and tout for his vote, have made large capital out of unlimited and free trade in diseased animals, when addressing themselves to those who did not understand the matter. The curious and incomprehensible arguments which have been brought to bear in favour of Free Trade in general, have been largely resorted to in discussing whether this country should protect itself from the ravages of preventible imported diseases, or whether steps should be taken to stamp out those which are ravaging our flocks and herds, ruining stock-breeders and stock-keepers, rendering food more expensive, hampering trade, and, in fine, gravely injuring the national prosperity; and also whether, when this has been done, measures should be adopted to keep the country clear of these scourges, by preventing their invading us from other countries where, through indifference, physical, geographical, or other causes, they are always more or less prevalent. The way in which the subject of contagious diseases, whether of man or beast, is dealt with by us, is not creditable to our common sense, or to our reputation as a business and matter-of-fact people. Mankind suffers equally with the domestic animals, from false and, to a large extent, sentimental notions with regard to the manner in which we should deal with contagious diseases. The most destructive and loathsome disorder to which the human race is exposed, and the one which is probably destined, if unchecked, to ultimately sweep our species from off the face of the earth, though perhaps the most easily suppressed of all the transmissible maladies, is allowed, through the inherited or acquired blindness of statesmen, and the false and filthy sentiment of ignorant and cruel people, to be left to the operation of the laws which govern free trade, and to become, if it may, the birthright and torment of every individual.

If misery and death will not operate in producing reform in our management of the contagious disease incidental to mankind, it yet appears evident that the heavy pecuniary loss and inconvenience caused by some of those peculiar to cattle is attracting attention; and the manner in which the subject of Foot-and-Mouth Disease was discussed in the Commons, as well as the weight of the arguments brought to bear in favour of its extinction and future exclusion, together with the startling result achieved by the motion of Mr. Chaplin, shows that there are strong reasons for hoping that we are fast approaching the time when this and other communicable diseases of animals will be extinguished.

The stock and stale arguments fished up whenever it is proposed to take precautions against the admission of exotic plagues into these islands—arguments which, we are sorry to say, have been borrowed by members of our own profession, who ought to have known better—will not bear examination, and their fallaciousness was thoroughly exposed by those who understand the subject, and are not fettered by the false doctrine which governs a certain school of political economists.

These foreign contagious diseases can be stamped out in this country, and their re-introduction prevented, if we care to adopt the proper measures. The sacrifice will be little, and the gain immense, to the entire community. It is not a political, party, or agricultural question this, but one of grave national concern, and it is to the interest of every one to know that it is so.

Speaking from the medical and scientific point of view, and to the same effect as we have so often expressed ourselves, there can be no doubt whatever that this and other diseases of the same kind never arise spontaneously; that they have been carried by living infected animals into these islands from contaminated countries, and allowed to spread, because suitable measures have not been devised to hinder their entrance or extinguish them when they have entered. So long as live cattle or other creatures capable of being infected with Foot-and-Mouth Disease, or any other equally virulent malady, are allowed to disembark on our shores from disease-infested countries, so long will we suffer from their ravages. Slaughter at the ports of debarkation is no safeguard, as experience (which should teach us something) amply proves, because the infecting agent may escape in so many various ways.

It would be no loss, but a great gain, if it is necessary to trade with infected countries, to substitute a dead for a live animal traffic. This would diminish the risk of imported disease to a minimum, while it would spare animals the heavy suffering they so often experience in transit.

With regard to suppressing Foot-and-Mouth Disease and contagious Pleuro-pneumonia, we have always maintained that this task should not be entrusted solely to local authorities, but to a central authority, so as to ensure uniform and combined action. The local authorities are too much swayed by local influence, and only too frequently do not seem to understand the nature or importance of the duty incumbent on them with regard to contagious diseases of animals. On the score of economy, they frequently employ unqualified and incompetent men as inspectors, and in this they effect no saving, but the contrary.

On the whole, the result of the discussion in the House of Commons is the best evidence we have yet had that our legislators are becoming alive to the serious evils of the present system of cattle traffic, and are beginning to recognise that unless a common-sense view is adopted as to the measures necessary for keeping the country free from foreign contagions, these will always be present, and produce the same ruinous effects with which we have been familiar for now more than forty years.

TUBERCULOSIS IN FOWLS.

THE literature of Tuberculosis, says the *Lancet* for August 4th, is amongst the most extensive of any subject in medical science, and since Koch's discovery of the bacillus, contributions to this special department have multiplied at a very rapid rate. The latest, and in some respects the most instructive, of these essays is contributed by Dr. Ribbert, of Bonn, to the last number of the *Deutsche Medizinische Wochenschrift*, and it consists in a briefly summarised account of some investigations into the pathological anatomy of the Tuberculosis of fowls, particularly with reference to the presence of bacilli in the tubercular formations. In the presence of the doubt which still prevails in some quarters respecting the identity of bovine and human Tuberculosis—a doubt which is in a fair way of being dispelled if Koch's bacillus is to be taken as the criterion of true Tuberculosis—it will excite some surprise, and perhaps some consternation, to learn that a disease which occasionally ravages the poultry yard is characterised by the same micro-organism. If Dr. Ribbert's observations be confirmed in every particular, our ideas concerning Tuberculosis will require to be still further extended, and another possible source of infection through food will have to be admitted. For our own part we do not desire to press this suggestion too far, and will be contented with giving an account of Dr. Ribbert's research.

Tuberculosis had been unusually prevalent among poultry in Cologne and the neighbourhood, so he had ample material to examine. He found the characteristic changes most marked in the intestinal tract, the liver, and the spleen. In the intestine there were beneath the serous coat nodules varying in size from a pin's head to a walnut, the smaller ones projecting beneath the mucous membrane, which was puckered in a scar-like manner over the surface of the larger masses. On section these growths presented much caseation. The foci in the liver and spleen were some of them almost microscopic, others varying in size up to that of a cherry, the larger nodules being caseous in the centre. Occasionally, similar nodules occurred scattered through the lungs and kidneys. All these tubercles were the seat of bacilli in great numbers, generally massed together in groups, and so abundant, that in the stained sections their presence could be detected with the unaided eye. Their disposition in the nodules was peculiar. Thus, in the very small hepatic nodules the bacilli were collected in the centre, the periphery being composed of inflammatory tissue. The nodules next in size presented an area in the centre partly caseous and wholly free from bacilli, which were grouped in a zone outside this. In the largest tubercles it was possible to distinguish four zones—viz., a central caseous mass, a zone of tubercular cells free from bacilli, then the bacilliferous zone, and lastly the outer zone of inflammatory tissue. It would appear as if, with the growth of the nodule, the bacilliferous zone continued to extend its area, and that caseation occurred, not from the direct action of the bacilli, but from the shutting off of the blood supply.

Perhaps the most interesting fact that comes out of Dr. Ribbert's work consists in the observed relation of the bacilli to the blood-vessels, particularly of the lungs, where the indurated vascularised areas surrounding caseating tubercle yielded on examination the following facts. The parallel bundles of connective tissues forming the walls of the veins were seen to be thickly invaded by the bacillus, which occurred in irregularly shaped masses, in places encroaching upon the lining membrane of the vessel, the bulging of which produced the appearance of minute tubercles, and rendered Thrombosis probable. The bacilli were specially massed within the mesh-like spaces of the connective tissue forming the vessel wall. Caseation was not to be found in these structures, and the arterial walls were similarly invaded by the

bacillus. It is suggested that, if the same invasion of the blood-vessels occur in the human subject, we may not have to go far to seek for an explanation of that rather inexplicable occurrence in the history of Pulmonary Phthisis—viz., early hæmoptysis. The vessel wall, weakened by the invasion of the micro-organism, yields before the blood-stream, and gives rise to the hæmorrhage, and the discovery by Hiller of bacilli in the sputa of cases of this initial hæmoptysis seems to support the inference, which, however, should not as yet be allowed to go beyond the region of hypothesis. More plausible is the other inference which Dr. Ribbert deduces from this involvement of the veins—viz., the facility with which a general tubercular infection may arise secondarily. He is careful to point out that there is no question here of any special form of new growth in the vessel wall; but the essential feature is the presence of bacilli in situations admirably calculated to ensure their entrance into the circulation.

A few remarks upon the character of the Tuberculosis of fowls conclude his suggestive paper. The large size and advanced character of the intestinal nodules point to the alimentary canal as the primary seat of the disease, the liver and other organs being secondarily infected. It is easy to infer from this that an epidemic of Tuberculosis in the poultry-yard may arise through feeding, the excreta of the fowl affording the virus. But this hypothesis has not received direct confirmation. Dr. Ribbert has not found bacilli in the excreta examined, nor was he able to induce Tuberculosis in two fowls with whose food excreta from tuberculous fowls were mixed. On the other hand, he succeeded in inoculating fowls with tubercle by the introduction into the abdominal cavity of portions of the intestinal nodules. The inoculated tubercle, it may be remarked, did not occur in the intestine, but only in the spleen and liver, nor did it present many bacilli. Inconclusive as this part of the research appears to be, it opens up a new field of research, which, we trust, pathologists will not be slow in following up. It shows, further, how much may be gained from comparative pathology upon this most interesting subject of modern research.

PROTECTIVE INOCULATION FOR SYMPTOMATIC ANTHRAX.

A SERIOUS outbreak of Black Quarter, or *Charbon symptomatique*, as our French colleagues term the disease, having occurred in Essex in May last, we were requested to obtain some of the attenuated virus employed with so much success by Professors Arloing and Cornevin, of the Lyons Veterinary School, in order to protect animals from this malady—which is not Anthrax, but a disease closely allied to it. Professor Arloing, with that courtesy and kindness which ever distinguishes our *confrères* on the other side of the Channel, promptly forwarded a small quantity of unmodified virus with which to inoculate a guinea-pig, and so obtain an abundance—and also some attenuated virus for first and second inoculations. In addition, he favoured us with the following particulars, which are of much value at this time, as they may enable members of the profession in this country who care to adopt this protective inoculation for an incurable disease, to do so successfully, if they have the time and means for preparing the virus.

He writes: "We employ two procedures. The oldest and most efficacious consists in injecting into the veins of an ox one-half to one cubic centimètre of virulent juice extracted from the muscles involved in a symptomatic tumour. I send you a small quantity of very virulent dried virus with which you may kill a guinea-pig, by injecting it beneath the skin of the thigh, after diluting it with water.

"You then take the muscles from the tumour of this creature, triturate

them in a mortar, adding one half of their weight of pure cold water, and squeeze the mass in several doubles of fine muslin, to prevent embolic particles getting into the juice, which, prepared in this way, is fit for intravenous injections.

"In order to make these injections, the animal must be thrown down, the jugular vein completely exposed for about two inches, the virus being pushed into the centre of the vein by means of a syringe provided with a pointed cannula, similar to that employed for the subcutaneous injection of morphia. *Take the greatest care*, by employing good instruments and adopting every precaution with regard to cleanliness, to prevent any of the virus getting into the cellular tissue around the vein.

"The second procedure consists in injecting beneath the skin, on the inner surface of the tail, of virus attenuated by the action of heat. At first a very attenuated virus is injected, and in eight to ten days afterwards, another injection is made of a stronger virus.

"The dried virus is employed; and to use it, it should be finely diluted in water by means of a mortar. One centigramme of dried virus is required for one cubic centimètre of water. This yields a dose for a beast in our country; but with the higher-bred English cattle it will be prudent to diminish this dose somewhat.

"When the virus is finely diluted, it is put into a syringe with a strong pointed cannula, and injected into the subcutaneous connective tissue. The part we select to make the injection into is the inner surface of the tail, about two hands'-breadth from its free extremity. At this point the connective tissue is dense and resisting. Take care not to break the cannula. To obviate this inconvenience, we take the precaution to make a small hole in the connective tissue with a very fine trocar.

"The consecutive local phenomena at the seat of inoculation are insignificant; but the general phenomena are variable, according to the susceptibility of the subject. They are manifest during four to five days. Sometimes, though very rarely, the malady becomes completely developed and kills the animal. This accident cannot be predicted, and it appears to be due to some special condition; the same happens in inoculating for the prevention of Splenic Apoplexy with Pasteur's 'vaccine.'"

Proceedings of Veterinary Medical Societies, &c.

CENTRAL VETERINARY MEDICAL SOCIETY.

A MEETING of this Society was held on the 19th of July, at 10, Red Lion Square, at which the following Fellows assembled:—Mr. J. Woodger (President), Professor Axe, Professor Pritchard, Messrs. H. K. Shaw, G. R. Dudgeon, H. Caton, W. Roots, G. Gray, A. Broad, J. Rowe, F. W. Wragg, A. B. Daniel, H. J. Hancock, T. Moore, J. Broad, Arthur Broad, J. H. Brown, F. G. Samson, and C. Sheather. Mr. Adrian Jones, A.V.D., was one of the visitors.

Mr. A. BROAD then read the following essay:—

I commence my remarks with the question, Is Cardiac Inflammation a very rare occurrence in the horse? and, as my answer, should say that it is not. When co-existent with other chest maladies, a conjunction not uncommon, there is great probability of its being overlooked, for its presence is not always defined by pathognomonic symptoms in the clearest manner. Cardiac complication is the cause to which should be attributed the tardy progress in many a protracted convalescence. Several cases of Heart-

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disease having come under my notice during the past few months, my attention has been specially drawn to the subject, and I have brought it forward for discussion with the view of eliciting the result of the experience of others in regard to its relative frequency, and on various points of interest in relation to it.

Many circumstances combine to render the study of the diseases of the heart deeply interesting. The duties devolving upon this organ are important and arduous, and the necessity that these duties should be efficiently performed renders it imperative that the heart should retain its normal structure and power. In no animal under our care is such a severe call made upon the cardiac mechanism as in the horse; we, therefore, should be prepared to find heart mischief no great rarity among equine disorders.

Over-exertion may not only directly produce grave consequences, such as sudden and complete failure of the heart's action or rupture of its walls, but may also lay the foundation of serious trouble by straining and injuring the cardiac valves. Looking to the situation of the heart, we find it well protected from any external injury or influences, and in construction it is, in the main, simple, its four cavities being formed by striped muscular tissue, a structure not ordinarily very prone to inflammatory attack. But to adapt the organ to the due performance of its work, a great amount of structural finish and delicacy is expended upon it, and this in particular in two points, one being the arrangement which ensures to the heart its abundant supply of nerve force and connection, the other the manner in which it is covered by elaborated membranous structures both externally and internally.

The heart has within its walls important ganglia and nerves of the sympathetic system. The cerebro-spinal system also supplies it with nerve fibres, and it is in intimate connection with other viscera through the important pneumogastric nerve; this is well shown by the marvellous manner in which the heart responds to impressions upon various organs, as the brain and stomach. This reflex response to distant stimuli is a necessary provision for the harmonious working of the system, yet it renders the heart liable to suffer as the result of disorders affecting totally distinct organs.

If we take, as example, an ordinary febrile attack, what functional disturbance we find affects the heart! Again, see the effect upon the action of that organ of pressure upon the brain, or various gastric derangements.

The presence in the heart of much fibrous tissue is another point to be noticed. Surrounding it externally is the delicate Pericardium, and its interior is lined by the Endocardium, a fine membrane of complex structure, further elaborated by entering into the formation of valvular folds at the various cardiac orifices.

The heart is amply supplied with blood through the coronary arteries, and its well-being is quickly affected by any deterioration in the quality of the nutrient fluid, but the presence of this amount of delicate membrane and fibrous structure renders it especially liable to suffer from that condition of the blood which so injuriously affects the fibrous tissue of the body in many situations—the articular surroundings and the thecæ of muscles in Rheumatism, for example. Inflammation occurring in the heart is variously styled, according to the part involved, being either Pericarditis, Endocarditis, or Carditis (more precisely termed Myo-carditis). The first two forms of disease occur both jointly and independently, and either or both may be accompanied by Myo-carditis.

The existence of Carditis in any but a strictly localised form has been denied, it being argued that the action of the cardiac muscle would perforce

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be arrested. Now it cannot be denied that this would happen after a certain stage of the disease had been reached—in fact, such is the actual termination of the malady—rendering it short, sharp, and fatal. At the same time, of the existence of such an affection I have been witness: one case of the kind I reported in the *Veterinarian* some years ago. Acute symptoms of distress are manifested, and death caused in a few hours. On *post-mortem* examination the damaged condition of the heart-wall can be clearly demonstrated. The inflammation first originates in, or beneath, the membranes, and extends to the muscular structure; and it is extremely probable that some amount of Myo-carditis frequently accompanies Endocarditis, adding greatly to the severity of the symptoms.

If there is, in regard to Pericarditis, one feature more noteworthy than another it is the insidiousness with which it frequently makes its onset and progress; many attacks of Pleurisy are accompanied by Pericarditis, and the latter is not always recognised, for it sometimes produces little alteration in the character of the symptoms. Subacute Pericarditis is very frequently overlooked, and only revealed at the autopsy, when there is in evidence the distended pericardial sac, containing it may be many pints of serum.

The nature and anatomy of our patients, and too often the circumstances under which our examinations have to be carried out, preclude our making that general use and study of auscultation, which have been of such valuable assistance to the physician in the diagnosis of cardiac diseases; under favourable circumstances we may, however, detect the friction sounds of the inflamed pericardium.

I would not aver that inflammation of the endocardium and cardiac valves may not arise from an alteration in the blood supply as a direct result of external changes of temperature, or from some other influence acting upon the vaso-motor nerves; but I believe that the general cause is an altered or impaired condition of the blood. Dr. Richardson's notable experiments proved the susceptibility of the endocardium to an abnormal condition of the vital fluid circulating within the cardiac capillaries. By injecting acid solutions into the peritoneal cavity and into the venous current of animals, he produced symptoms of Endocarditis and valvular thickening. In common with other kindred structures of the body, the membranes and fibrous tissue in the heart are especially liable to inflammatory disorder during an attack of Rheumatism, the blood being at that time characteristically vitiated. Endocarditis should not be looked upon merely as a possible sequel of a severe rheumatic affection, but as one of the most probable manifestations of its onset—perhaps, indeed the only one. Rheumatism is not of very frequent occurrence in the horse, the causes of mal-assimilation of food not being so common as in some other domestic animals; it is seldom that the food of the horse is too rich in quality, and to an abundant allowance of nutriment there is generally a compensatory amount of hard work. Still, Rheumatism, from one cause or another, does occur; the rheumatic condition of blood is produced, and its injurious influence may be felt upon the fibrous structures within and around the heart without much perceptible effect upon the joints or muscles. Even in subacute Rheumatism the heart may be in this manner affected; and I am of opinion that Cardiac Inflammation is excited by a state of the blood not very unlike that peculiar to Rheumatism. An injuriously abnormal condition of the nutrient fluid may be induced by failure in some one or other of those organs whose office it is to renovate and purify the blood, by elimination or construction, as the skin, kidneys, or liver.

A chill acting upon the cutaneous excretory apparatus may cause harm, not only by driving the blood from the superficial capillaries to remoter parts, but by engendering an impure condition of blood through the suppression of the

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healthful emunctory action which the skin possesses. As I have indicated, the blood may be detrimentally vitiated through want of normal excretory powers in the liver, or insufficient transformation of nutritive material in its passage through the portal circulation. I have certainly noticed the coincidence of Heart Disease with both liver and kidney derangement.

The next point to which I wish to draw attention is the significance of the characteristic symptoms of the disorder. As in the case of other inflammatory complaints, Endocarditis is accompanied by the symptoms of febrile disturbance, in varying degree according to the severity of the attack. The temperature is much elevated; the appetite fails; the patient suffers from coldness of the extremities, as well as from general surface chilliness, with shivering; also exhibits dulness and marked expression of uneasiness; but there are symptoms more pathognomonic. The action of the heart at once arrests attention: it is rapid and excited, but very variable in the force of its pulsations, with occasional intermittence.

As the malady progresses in intensity, the pulse betrays a most irritably excited condition of the heart; the beating is tumultuous, extraordinarily rapid, and to be distinctly heard and even felt, over every part of the thorax; yet this forcible contraction is distorted and erratic, for while the heart is wildly beating 110 to 120 times in the minute, or even more rapidly, scarcely more than half its contractile efforts produce an effectual pulse-wave in the arteries, so that we have the apparent anomaly of a radial pulse of seventy-six or eighty while the heart-beats number 130. The second sound is indistinct or wanting, and a murmur can sometimes be detected accompanying the systole. Another prominent symptom is a jugular pulsation synchronous with each contraction of the heart. There is, in the acute stages, embarrassment of respiration, and sometimes a frequent cough.

I have found the febrile disturbance easily and quickly relieved, but the minor symptoms of uneasiness only gradually disappear as the heart returns to its normal condition.

The apparent reflux up the jugular veins is due to the imperfect closure of the right auriculo-ventricular orifice, there is insufficient approximation of the muscular walls and non-apposition of the tricuspid valve segments; at each systole a rush of blood is thus allowed to pass towards the auricle, where it arrests the flow from the venæ cavæ, which oncoming current, receiving a sudden check, gives rise to a backward impulse, apparently a wave of regurgitation far up the neck. There is also some patency of the mitral orifice, which allows regurgitation of blood to the left auricle, thus impeding the stream from the pulmonary veins, and causing a feeling of oppression in the lungs. The systemic arterial circulation is also much weakened; raising the head will sometimes cause a serious check to the blood-current, and should the patient be injudiciously exercised, or kept at work too long after the commencement of the disease, he will be extremely likely to fall suddenly.

The peculiar character of the rapid pulsation of the heart is a singular feature, for though each beat appears of equal force with the others, many of them are completely abortive, the regular rhythm of the heart is destroyed, there seems no second sound, and one ventricular contraction so quickly follows another that the blood is not propelled through the aorta at each stroke, much of the impulse being expended in the direction of the auricles. To what can be attributed this excited abnormality of action but to exalted nervous irritability of the cardiac ganglia in consequence of the inflammatory disturbance around them? This view receives support from the beneficial effect which follows the administration of Digitalis; this drug acting upon the heart from a centre within the medulla oblongata, through the medium of the inhibitory nerves, controls the nervous excitability and

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steadies the pulse, at the same time giving it force, Digitalis being supposed to excite the cardiac muscle to regular contraction.

It is well known that there is a simple form of intermittency frequently met with in horses apparently healthy and at work, and more frequently found as a sequence of a debilitating disorder ; we may regard this as being due to a slight deficiency of nerve force. The want of beat occurs at regular intervals, and in the cases of debility in the nerve centres, at an interval which, while remaining regular, gradually increases as the patient gains strength. In inflammatory disease of the heart the nervous apparatus is violently deranged, rhythm and co-ordinating power are destroyed, the intermittency occurs at regular intervals, lasts during a variable time of pulsations, and there is a complete absence of regularity in both force and rate of the cardiac contractions.

This condition of things indicates mischief in the heart of a serious nature, and may be considered as due to the irritation of the cardiac nerve centres I have alluded to. It must not, however, be forgotten that both an intermittent pulse and some amount of abnormal action of the heart may be caused by reflex impressions derived from other organs.

Endocarditis is also met with in a subacute form. The animal affected may not appear to suffer till put to work, when it will suddenly stop at frequent intervals, appear more or less distressed, and be for a short time unable to proceed. After this has occurred a few times, the horse will be kept in the stable. We shall find the pulse quickened, perhaps to seventy or eighty beats per minute ; it will be irregular and intermittent to a marked degree, and auscultation may assist us in indicating the nature of the mischief. With appropriate treatment the patient will rapidly improve, though a considerable time may elapse before the heart regains its normal tone and capacity for work. In cases of long standing, wherein hypertrophy exists, the horse will not be found fit to undergo work.

Though Endocarditis is seldom directly fatal, its indirect consequences are of the most serious nature ; among these are hypertrophy and valvular thickening, with vegetative growths. The former, doubtless, arises from the excessive ventricular exertion causing greater activity of capillary circulation and increased nourishment in consequence. The valvular increase is a natural result of the inflammation, as we see in a tendon after a sprain, or in ossific enlargement from bone. In most situations this additional material is harmless, but in the case before us grave consequences ensue : the cardiac valves are rendered rigid and irregular, and the opening which they should assist in closing remains partially open : the pulmonic circuit of blood is impeded ; hypertrophy follows, and fibrinous clot is apt to form on the valvular growth. The danger is then incurred of portions of this clot finding their way into the arteries, there to produce embolism.

Another serious result of valvular insufficiency is weakness of the arterial current and obstruction to the return of the venous stream ; hence we find dropsical effusions in various parts. Where no dropsy is manifest externally, we may frequently find it affecting the coatings of the intestines through nearly their whole track, a jelly-like layer being situate beneath the peritoneal tunic.

Treatment.—There is little of a specific nature in the treatment of Endocarditis. The chief objects to be attained are the reduction of the fever and inflammation, and the prevention of fibrinous deposit within the endocardiac tissue. Nitrate of potass will be found extremely useful, with an occasional dose of two or three ounces of Sulphate of magnesia in some cases. A few drops of Aconite may be given with advantage when the temperature is very high and the pulse rapid. Diffusible stimulants, as the ethers and Carbonate of ammonia, are to be recommended in moderate doses. Mustard plasters

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over the heart will do good, and I have used successfully hot wet flannel rugs covered with waterproof cloth. I believe there is much to recommend the early application of a blister, though I have only tried this remedy in the sub-acute cases. The opponents of blistering in this disease will say that such remedies increase the disposition of the blood to fibrinous formation; certainly the local inflammation existing in the heart will have this effect if unchecked; therefore, if blisters will effectually relieve the inflammation, apply them, and so lessen the danger which is locally existing. The power of drugs will have some effect in counteracting any tendency in the blood to clot around the valves. After the more urgent symptoms have improved, Digitalis will prove of signal value in restoring the nerve-power and allaying irritability. I have given twenty-grain doses twice daily, and found it sufficient to rapidly cause improvement in the pulse. It is, of course, inadmissible when the muscular tissue of the heart is much weakened by degeneration, or atrophy.

Professor AXE, commencing the discussion on the subject, said: I have listened to the remarks of the essayist with considerable pleasure and interest. I would, however, point out that in my experience and judgment, Endocarditis, as a distinct disease, is very rare in the horse, and an affection the diagnosis of which is attended with great uncertainty; so that it may be said to be of a purely speculative character. The only cases of simple Endocarditis which have come under my notice have been of an acute ulcerative character, such as is represented in the diagram before you. That example was furnished by a horse which died suddenly from Septicæmia while under treatment for Phalangeal Fistula, but no such condition of the endocardium as here depicted was suspected to exist. Endocarditis is not unknown to me as a secondary affection, of limited extent, consequent on mechanical injury of the membrane by inflammatory growths on some part of the valvular mechanism; but even such examples are rare, and for the reason that horses and other of our domesticated quadrupeds, when suffering from heart affections, are too little cared for and controlled in their movements to admit of those extreme physical changes in the valves being reached, to which Endocarditis usually owes its origin. It is more often the case that, under the strain of forced exertion, disablement of the heart and death ensue before the conditions for the provocation of Endocarditis are laid down. In the human subject, Endocarditis, as a complication of valvular disease, is not uncommon, because of the progress the valvular swelling and granulation are permitted to make, under the extreme caution and general care of the patient himself, which tend to the prolongation of life. That simple Endocarditis does occur as a consequence of normal changes is certainly the case, as is shown in the diagram before us; but I question our proficiency at this time to form a reliable diagnosis.

Professor PRITCHARD said he had, clinically, had but little experience of the malady under discussion as a distinct uncomplicated disease. He had many times found the lining membrane on the left side of the heart seriously congested, and on two or three occasions had observed ulceration; but every instance of this had been preceded by some other, and fatal, complaint. He might say that he had never made an examination, *post-mortem*, in a disease associated for any length of time with disturbed and excited cardiac action, without finding some amount of hyperæmia of the endocardium. He had found the left side of the heart thus affected in fatal cases of bowel inflammation and Pneumonia. Why the left side should so especially be the affected part was, he thought, matter for discussion.

Mr. WRAGG said he could endorse the remarks of Professor Pritchard. He could not say that he had ever diagnosed Endocarditis as a primary affection, but on several occasions, while examining the hearts of horses

which had died a painful death, he had observed extravasation beneath the membrane.

Mr. DANIEL alluded to cases of Megrims following Endocarditis, and gave one instance. The horse had been turned out to grass, and on being taken up was found to be in bad condition and unfit for ordinary work. After doing some amount of light work, an attack of Megrims came on, and succeeding attacks proved so severe that the animal was destroyed. No brain disorder was detected ; in the right ventricle were valvular deposits, and also similar fibrinous formations on the endocardium of the ventricle. These changes might, he thought, be traced to injury from the strain involved in starting heavy loads. He attributed the cerebral disturbance to pressure, in consequence of the difficulty in the return of the blood from the brain, through the ventricular mischief.

Professor PRITCHARD asked if the right auricle was found to be healthy?

Mr. DANIEL, in reply, said he had no mention of the auricle in his notes, but believed that it appeared normal.

Professor PRITCHARD said his reason for asking was that the right auricle was the cavity which received the venous blood ; and looking upon Megrims as due to a congested state of the cerebral venous sinuses, he could not understand tracing the attacks of Megrims to the condition of the heart, provided that there was nothing abnormal in the right auricle.

Mr. HANCOCK thought that as the varieties of brain disorder were many, it was well to look deeply, and attempt to ascribe each case to its proper cause. He thought it very probable that the cerebral affection instanced by Mr. Daniel was the result of ventricular disease. It was generally conceded that brain symptoms of the class alluded to were due to Epilepsy, and if this disease be considered to arise from a deficient supply of blood to the brain, the sequence of cause and effect was complete, as the brain would suffer from the obstruction to its capillary circulation.

Professor AXE considered that two explanations might be offered as to the cause of the epileptic seizures in the case under consideration. Firstly, obstruction to the free flow of blood through the right side of the heart, inducing venous engorgement and defective nourishment of the brain tissue. Secondly, disintegration of the intra-cardiac coagula, leading to pulmonary embolism and secondary capillary embolism of the brain. He related two cases bearing on the point. One was that of a horse admitted to the college infirmary as a sufferer from Megrims ; the only lesion in the brain was a minute spot of congestion on the anterior part of the floor of the fourth ventricle. In the second case, the horse was also subject to Megrims, and showed very marked cardiac disturbance ; a lesion of the same nature was found in exactly the same position as in the first case, and microscopical investigation revealed that it was the result of a small embolism.

Mr. GRAY considered that were Endocarditis produced by straining efforts as easily as it would appear from Mr. Daniel's statements, it should more frequently be met with. The differential diagnosis between Pericarditis and Endocarditis was, he found, a subject of difficulty. He recently had seen a horse suffering from what he considered to be Endocarditis, and it was produced in the manner alluded to by Mr. Daniel. The animal was drawing a heavy load over ploughed land, when he suddenly fell, and then exhibited symptoms similar to those mentioned by the essayist. Relief was afforded by the application of a blister over the heart. In another case the horse, after exhibiting symptoms of Heart Disease, became subject to fainting fits, somewhat resembling, though not identical with, Megrims. In the fits of the kind he alluded to the patient generally fell, and they should be distinguished from attacks of Megrims. After death, in cases where Endocarditis existed, he usually had found extravasation beneath the membrane.

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Mr. WOODGER said that Endocarditis was not considered easily diagnosable in man, and he did not think that in our practice we should be expected to diagnose it with greater facility. No doubt it was to be met with, chiefly in combination with other diseases—as Pleuro-pneumonia and diseases of the kidney. He expressed his agreement with the remarks of Professors Pritchard and Axe. He did not recollect seeing a pure case of Endocarditis.

Mr. BROAD said it would appear that his experience had been somewhat peculiar with regard to the number of heart cases he had met with, comparatively. But he wished to emphasize two or three points:—In the first place, he had certainly not said that Endocarditis was found uncomplicated by other affections; sometimes there is evidence of renal disorder, or the liver is at fault; at others, inflammation of the lungs or pleuræ accompanies the malady; in short, the cause to which he attributed the disease was disorder of the blood through prior derangement of other organs. The primary cases of Endocarditis were due to strain of the valves; those of Pericarditis were of traumatic origin. His attention had but recently been directed to this subject, as till within the last two years he had met with but very few cases of the disease; but his remarks were not founded on theory only, and he should be pleased to bring forward some of the cases he had lately seen; he had originally intended to embody them in the essay. He shortly related two cases. With Mr. Gray, he considered that the distinction of cases of Endocarditis from Pericarditis was a matter of difficulty, requiring care and experience; and it should be borne in mind that they were frequently co-existent. He had not met with Megrims as a resultant of heart disease—it appeared a probable consequence of such a malady—though with the retarded current from the brain, there was also diminished force in the arterial stream sent in that direction, which would be a compensatory point in so far as mechanical pressure was concerned.

Professor AXE said he thought that the cases which Mr. Broad had just detailed were valvular ones, which gave rise afterwards to endocardiac injury.

The ESSAYIST then replied that it appeared to him that in Endocarditis the mitral valve was usually, and rightly, considered to be the especially chosen point of attack for endocardiac inflammation. Such was the case in Rheumatism. He would, moreover, consider that fibrous thickening of the valve, or vegetative growth upon its structure, argued the existence of previous inflammation from one cause or another, injury or otherwise—in other words he would say of Endocarditis.

Professor PRITCHARD then proposed a vote of thanks to the Essayist, which was seconded by Professor AXE, and accorded.

LINCOLNSHIRE VETERINARY MEDICAL SOCIETY.

A MEETING of the above Society was held at the George Hotel, Grantham, on June 28th, 1883, the President, Captain Russell, in the Chair.

Present—Mr. T. Batchelder, Grantham; Mr. S. Whitworth, Grantham; Mr. J. Hoole, Sleaford; Mr. W. Hoole, Heckington; Mr. H. Brooks, Fulbeck; Mr. J. Brown, Navenby; Mr. J. Mackinder, Peterboro'; Mr. T. Runciman, Market Deeping; Mr. F. Spencer, Wragby; Mr. T. Smith, Market Rasen; Mr. W. Field, Grimsby; and Mr. W. Carless, Lincoln, Secretary.

The minutes of the last meeting of the Society were read and confirmed.

The CHAIRMAN said,—With reference to these minutes, we have had an excellent example of the want of sympathy and good feeling that exists amongst veterinary practitioners in the elections of candidates for the Council of the Royal College at the annual meeting. You may have noticed the number of candidates for election, and yet there was only one country

practitioner elected. All the others were army or London men, and this was simply because the Provincial Associations had not worked in harmony with each other. Our Secretary wrote and volunteered the assistance of this Society in pushing the various candidates ; from some he received no answers, and in the case of others they declined. The Midland Counties' candidate was not elected, and, in fact, all the others were shut out with the exception of Mr. Whittle, the candidate of the Lancashire Society. It is most important we should act and work together to get men from the country upon the Council. Every year we see the result of electing London men, inasmuch as they hardly represent the wishes of country practitioners. We must work together, and have a strong number of subscribing members to work for ourselves or for such candidates as we may select.

The SECRETARY then read correspondence from gentlemen unable to be present.

The CHAIRMAN said : With reference to the registration of unqualified practitioners, the persons whose names were sent up, the result of our first meeting at Lincoln, have all been elected. The last circular from the Royal College was the result of the remarks we made. If any veterinary surgeon wished to oppose a candidate on the ground of a conviction or otherwise, a statutory declaration would be necessary. In the case of one individual, the facts relating to two separate convictions before a magistrate were brought forward, but in the absence of the statutory declaration that person is registered ; but in the Act it is distinctly stated that "no person shall be admitted against whom a conviction was found." There were two or three who spoke on this subject at the annual meeting. There were on the list those who had undergone terms of imprisonment, but as no one had made a statutory declaration to that effect, these objections were said to be null and void.

Mr. SMITH said several remarks had been made, and there was some difference of opinion about the five years' practice being a qualification, or whether the candidate should not have only been with a qualified practitioner for that time.

The CHAIRMAN observed that that had evidently been overruled, because there were several on the list who had not been in practice on their own account. They were admitted if they had been assistants to qualified veterinary surgeons, and there was one who had only been the head blacksmith in a veterinary surgeon's yard.

Mr. MACKINDER remarked that where they knew of any previous conviction they could upset it, even if the party had been registered.

The CHAIRMAN : No doubt of it, if you make a statutory declaration.

The SECRETARY then read a letter which he had received in reference to rescinding the Order from the Privy Council Office, referring to the employment of unregistered men as veterinary Inspectors, and asked whether it would be best to send a letter to the Privy Council Office asking them to rescind it, or to make enquiry, and move through the other Societies.

Mr. RUNCIMAN enquired, how about those who were not registered?

The CHAIRMAN : That certainly wants enquiring into. The Act states that no man shall practise except he is registered ; but any one holding the appointment of Inspector can continue to hold it. This is an anomaly which you cannot reconcile. I think we should be justified in asking the Secretary to write to the other provincial societies, enquiring what steps they will take, and saying that we would join them.

Mr. BATCHELDER then formally made his proposition as follows :—"It has been observed that an Order has been passed by the Privy Council allowing unregistered practitioners of Veterinary Medicine to continue in their office of Inspectors under the Contagious Diseases (Animals) Act. This Society therefore desires to express their disapproval of this Order, to the intent that steps be taken to rescind it as soon as possible."

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Mr. RUNCIMAN moved, "That this proposition shall be forwarded to the other provincial societies, and that they shall be asked to join in an effort to obtain the extinction of that Order."

Mr. MACKINDER seconded, and the resolution was carried unanimously.

The PRESIDENT then read his inaugural address upon "The Politics of the Veterinary Profession," and a discussion followed, in which Mr. Mackinder, Mr. Whitworth and Mr. Runciman took part. Mr. Carless threw out a suggestion in reference to members being refunded any expenses incurred in defending actions against unqualified men. No decision, however, was arrived at on that question.

Mr. WHITWORTH proposed Boston as the place for the next meeting of the Society.

Mr. HOOLE seconded. He thought Boston was as central a place as they could have.

Carried unanimously.

Mr. RUNCIMAN proposed a vote of thanks to Captain Russell for his excellent address, and genial conduct in the chair.

Mr. HOOLE seconded, and the resolution was carried unanimously.

Mr. WHITWORTH offered (in case no one else came forward) to read a paper at the next meeting of the Society at Boston.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE summer quarterly meeting was held at the Queen's Hotel, Leeds, on the 23rd July, the President, Mr. Joseph M. Axe, in the chair. The following members were also present, viz., Prof. J. W. Axe, James Freeman, T. Greaves, J. S. Carter, J. W. Anderton, B. Smith, P. Walker, J. E. Scriven, H. Snarry, G. Whitehead, A. W. Briggs, R. L. Robertson, T. C. Toop, W. G. Schofield, G. E. Bowman, W. F. Greenhalgh, H. Cooper, J. H. Carter, and the Secretary. Messrs. G. T. Pickering and J. McLean were present as visitors.

Apologies for non-attendance were received from Prof. Williams, Messrs. E. C. Dray, H. Fletcher, George Carter, F. Danby, J. and J. Freeman, and J. H. Ferguson.

The SECRETARY gave notice that at the next meeting he should propose Prof. J. W. Axe to be an honorary member of this Society.

The PRESIDENT nominated Mr. Reynolds, of Mansfield; Mr. SNARRY nominated Mr. G. T. Pickering, of York.

The SECRETARY read some letters received by him respecting the appointment of registered practitioners as veterinary inspectors. After some discussion it was decided to take no action; the mischief was done, and there did not appear any reasonable grounds to presume that the obnoxious privilege would be rescinded by the Privy Council.

AZOTURIA.

At the close of the general business of the Society, Professor AXE delivered a lecture on "Azoturia."

The Professor first directed attention to the divergent views which from time to time have been held in regard to the pathology of the affection, and at the same time pointed out those features by which the malady is distinguishable from Hysteria, sprain of psoa muscles, and other ailments with which veterinary pathologists have in the past endeavoured to identify it.

After describing the circumstances under which the disorder occurs, he then entered into a detailed description of the symptoms of the malady, and afterwards

drew attention to the present unsatisfactory state of our knowledge of its pathology. Professor Axe combated the views of Williams and others, who view it as the outcome of an immoderate accumulation of urea in the blood, and adduced a large amount of physiological and pathological evidence in support of his contention. In regard to the condition of the urine the Professor showed by a series of chemical analyses—

I. That the precipitate thrown down on the addition of nitric acid and subsequent boiling is essentially albumen, and not urea, as has been stated.

II. That the discoloration is due to the colouring matter of the blood, as shown by the application of suitable reagents.

III. That while the amount of urea contained in the urine varies in different cases, it cannot be said to exist in any abnormal proportion. He further stated that the simple presence of urea in the serum of the blood, as referred to by Williams, is no indication of its being the disease-producing agent, inasmuch as urea is normally present in it. As to the specific gravity of the urine, the Professor stated that in none of the cases to which his attention had been directed had any marked increase been observed. In respect of the composition of the urine, he had noticed a considerable diminution in the calcium carbonate, and a notable increase in the magnesium phosphates.

In speaking of the condition of the tissues after death, he dwelt on the general septicæmic character of the changes, and specially referred to their œdematous condition. In a case recently brought under his notice the amount of fluid contained in the muscular and hepatic tissues was estimated and compared with that contained in the same structures in health, with the result stated below.

Estimation of Moisture in Muscular Tissue of Horse Suffering from Azoturia.

I. From the psoas muscle 8 oz., or 3,840 grains, of flesh were removed and correctly weighed.

II. On some of the fluid being removed by squeezing, it was found to have lost 1,050 grains.

III. It was then minced up and placed in a water bath (the temperature not exceeding 150 F.) for twenty-four hours, and again weighed, and was found to have lost altogether 2,717 grains of moisture.

IV. It was now placed in the water bath for twelve hours, and again weighed, but the weight was found to be constant.

Water	...	...	...	...	...	2,717
Flesh	...	...	...	...	...	1,123
						3,840 grains,

there being present in the muscle water equal to 70·7 per cent.

Estimation of Moisture in Hepatic Tissue of Horse Suffering from Azoturia.

I. Eight (8) ounces of the liver were taken and correctly weighed.

II. On some of the fluid being removed by squeezing, it was found to have lost 1,125 grains.

III. The liver was now minced up and put into a warm water bath (temperature 150 F.) for twenty-four hours, and again weighed. It was found to have lost 2,478 grains.

IV. It was then put into the same bath for twelve hours longer, at the end of which time it was again weighed but found to be unchanged.

Water	...	...	...	...	2,478
Flesh	...	...	...	...	1,362
					3,840

there being present in the liver water equal to 64·5 per cent.

Estimation of Moisture in Muscular Tissue of Horse in Health.

A piece of the psoas muscle was taken from a horse and weighed. After the water had been expelled it was found to have lost 50·37 per cent. of moisture.

Estimation of Moisture in Hepatic Tissue of Horse in Health.

A piece of liver was taken from a mare and weighed. After the water had been expelled it was found to have lost 44·2 per cent. of moisture.

Analysis of Urine in Health.

Three samples of urine were taken from three mares, and yielded respectively the following proportion of urea :—

1st sample	...	...	...	...	11·9 parts per thousand.
2nd „	...	...	...	...	12·4 „ „
3rd „	...	...	...	...	11·38 „ „

When treated with peroxide of hydrogen and tincture of guiacum they gave no coloration, showing the absence of blood ; when a small quantity of blood was added to the urine the guiacum and hydrogen peroxide gave a distinct blue coloration.

Analysis of Urine in Azoturia.

Sample I.—Case 1.—On Wednesday, June 13th, a portion of urine removed from a bay cart mare suffering from Azoturia was submitted to analysis.

Physical Characters.—Colour in bulk chocolate brown ; viewed in test tube bright red, transparent, somewhat thicker than water. A small amount of granular matter visible in suspension. Specific gravity 1,015. To test paper it gave a distinctly alkaline reaction.

On the addition of nitric acid there was no effervescence. On being boiled a flocculent precipitate of albumen was thrown down.

A portion of the urine was taken and tested by the guiacum test previously employed for healthy urine when a beautiful blue coloration was produced, indicating the presence of blood.

A portion of blood from the same animal afforded the same re-action.

The total solids were equal to 30·36 parts per thousand, and were of a bright red hue, due to the presence of the colouring matter of the blood.

The urea was estimated by "Russell and West's" process ("Jour. Chem. Soc."[2], xii., p. 749), and was found to be equal to 11·590 parts per thousand.

Sample II.—Case 2.—Physical properties the same as sample I. ; specific gravity 1·37, alkaline to test paper.

On the addition of nitric acid there was slight effervescence. On being boiled a flocculent precipitate of albumen was thrown down. The total solids were estimated according to Newbauers' process ("Zeitschrift für Analytische Chemie," ii., p. 166). The ash or total saline matter was found to be equal to 4·61 parts per thousand.

The ash contained a very large amount of iron derived from the constituents of the blood.

The ammonia was estimated by Schlosing's method, and found to be equal to ·00039453 parts of urea per thousand.

Proportion of Chief Constituents in 100 *parts.*

Water	969 64
Urea	11·59
Ash	4·61
Hippuric acid extractives : blood and other matters	14·16
	1,000·00

Professor Axe concluded by saying :—From a full consideration of all the facts and circumstances which my investigation has so far revealed, I am constrained to look upon the term "Azoturia" as a misnomer which cannot be sustained in any sense whatever. As yet I have only proceeded a short way in the inquiry with which I am engaged, but it has already been rendered obvious that the teachings of the present are based on purely theoretical grounds, and rest rather on physiological possibilities than on real pathological data.

The etiology and pathology of the affection still remains obscure, and much further light is needed before a precise definition can be given of their essential nature.

Provisionally I think the disease may consistently be regarded as *acute convulsive Hæmatenuria.*

In the discussion that followed, the symptoms and treatment were the argumentative points. Messrs. James Freeman, Greaves, Joseph Carter, Schofield, P. Walker, B. Smith, Snarry, the President, and the Secretary took part in the debate.

Mr. GREAVES proposed, Mr. FREEMAN seconded, a vote of thanks to Professor Axe for his kindness in bringing the interesting subject under the notice of the members : carried with acclamation.

Mr. J. H. CARTER related a case of early fecundity in a heifer, which was delivered of a calf at twelve months and one week old.

THE SCOTTISH CENTRAL VETERINARY MEDICAL ASSOCIATION.

THE sixth quarterly meeting of the above Association was held in the Salutation Hotel, Perth, on the 13th July, 1883.

Mr. Ritchie, Forfar, Vice-President, occupied the chair, the following members being present :—Messrs. Spreull, Dundee ; Constable, Inchture ; Kay, St. Martins ; Black, Lochee ; Reid, Auchtermuchty ; and Clark, Coupar Augus.

Letters of apology for absence were received from Messrs. Hampton, Arbroath ; Bissett, Brechin ; Johnston, Perth ; Louie, Perth ; and Philp, St. Andrews. Visitors present : Mr. McArthur, Perth ; and Mr. Young, Scone.

The Secretary having read the minutes of previous meeting, the chairman called on Mr. Spreull, Dundee, to read his paper on "A new form of Zymotic Disease," the substance of which has been communicated to the VETERINARY JOURNAL.

Mr. McArthur, assistant to Mr. Johnston, Perth, showed to members two very interesting specimens of Calculi. After an animated discussion, the meeting was brought to a close.

J. CLARK, *Hon. Sec.*

ROYAL VETERINARY COLLEGE.

THE Annual General Meeting was held on July 5th in the board-room of the College, under the presidency of His Royal Highness the Duke of Cambridge. There were also present Lord Coventry, Lord Carrington, Lord Ribblesdale, Lord Arthur Somerset, Lord Norreys, Sir Thomas Bateson, Sir F. Fitzwygram, Sir Paul Hunter, Sir James Tyler, Colonel Kingscote, Mr. Newdegate, Mr. Harpley, Mr. Sutton, and Mr. Barnard Holt.

The Annual Report was received and ordered to be forwarded to each subscriber to the College.

Lord Egerton, of Tatton, Lord Waterford, and Mr. Legh, of Lyme, were elected Governors, and the proceedings terminated with a vote of thanks to His Royal Highness for presiding.

The following is the Eighth Annual Report under the Royal Charter of Incorporation, ordered by the Governors of the College to be presented to the subscribers :—

General Government.

No alterations have been made during the past year in the regulations relating to the government of the College.

At the Annual General Meeting in July last, Lord Hothfield and Lord Ribblesdale were elected Governors, and a vacancy has since occurred in the list of Governors by the death of the late Major-General Burnaby, M.P.

There are at present ten Vice-Presidents and twenty-six Governors, the total number being limited by charter to twelve of the former and thirty of the latter.

Mr. Berens has, for the second year, held the position of chairman of the General Purposes Committee.

The School.

The Governors are pleased to be again able to report an increase in the number of students who have joined the College during the past twelve months in comparison with the last two or three years. Sixty-three students have entered this year against sixty-one last year, and forty-seven the previous year.

The Council of the Royal College of Veterinary Surgeons have adopted a scheme by which a uniform scale of examination for entry to all the veterinary schools will be enforced. This is to come into operation in January, 1884. As the educational standard has, no doubt, been higher at this College than at the Scotch schools, this action on the part of the Royal College of Veterinary Surgeons should tend to still further increase the number of entrants to this College in the future.

No changes have taken place in the teaching staff since July last, and the general attendance and behaviour of the students has been fairly good. The restrictive preliminary examination held by the teachers, prior to the examinations by the Board of Examiners of the Royal College of Veterinary Surgeons, has during the last year been dispensed with ; the teachers, however, seem generally of opinion that it will be wise to revert to the old system.

The number of animals brought for treatment to the "cheap practice" continues steadily to increase. During the twelve months ending June 30th, 1881, 576 original cases were brought for advice or treatment ; from June 30th, 1881, to June 30th, 1882, 767 cases ; and from June 30th, 1882, to June 30th, 1883, 990. Several of the animals have made repeated visits to the College, consequently the amount of practical instruction afforded the students has been very considerable.

During the past year thirty-three students have presented themselves for

the examination for the diploma of the Royal College of Veterinary Surgeons, twenty-six of whom have passed. In the preceding twelve months forty-seven students were examined, of whom forty-one passed.

Infirmary and Subscribers.

The average number of horses daily in the infirmary during the year has been 51 against 60 the year before; the number in 1881 being 62, in 1880, 80, and in 1879, 87.

The individual number of cases admitted into the infirmary for treatment has been 768 against 806 for the twelve months ending June 30th, 1882. The numbers for 1881 and 1880 being 864 and 877 respectively.

The average number of dogs has been 6 against 6 last year.

The number of horses examined for soundness has been 1048, the numbers to June 30th, 1879, 1880, 1881, and 1882 being 1447, 1363, 1198, and 1045 respectively. The number of consultations and of animals treated as out-patients appears from the record to have been 1658 as against 919 in 1882, and 934 in 1881. In 1879 the number was 1202.

The number of new subscribers enrolled during the year has been 196 and 205 names have from death and other causes been removed from the list. There are at present 85 life subscribers and 967 annual.

Buildings.

No new buildings have been erected during the past year. Only the usual and necessary repairs have been undertaken.

Finance.

The Governors are pleased to be able to report an improvement under this head. Last year it will be remembered the annual expenditure exceeded the income by £510 1s. 4d., while this year the income is in excess of expenditure by £262 11s. 8d. Although the income arising from the stable department is smaller than it was last year, being £3885 against £4098, nevertheless the profit under this head amounts to £580 against £282 last year, the expenditure having fallen from £3816 to £3305. This may in a large measure be attributed to the decrease in the price of hay and straw, the price at present paid being £4 18s. per load for hay, and £2 2s. per load for straw: the prices being £6 10s. and £2 14s. respectively at this time last year.

The amount received for subscriptions also shows an improvement, being £2239 13s. against £1974, while the receipts from pupils' fees remain practically stationary, being £2291 2s. against £2297 8s.

A Committee has been sitting during the last year with a view of reducing the annual expenditure, and their recommendations have been adopted by the Governors. It is hoped that a saving of nearly £500 per annum will be effected, which in view of the falling in of the present lease in 1889 is urgently needed. Any negotiations for a renewal of the lease will undoubtedly have to be undertaken upon the basis of a very considerable increase of rent.

On the whole the prospect is certainly more encouraging than it appeared last year, and the Governors are sanguine that the profits arising from the infirmary will at no distant date show a very considerable increase, while the receipts from pupils' fees and subscriptions will at any rate be fully maintained.

Royal Agricultural Society.

A considerable number of investigations of outbreaks of disease have been made by officers of the College during the past year on behalf of the members

of the Society; also several consultations have taken place, both personal and by letter. Owing, however, to the Society having appointed local veterinary surgeons in different districts to act as inspectors, the number of investigations and consultations has not been quite so large as in former years.

During the year investigations into the disease known as "Foot-and-mouth" have been carried out by Professor Robertson, and the results have been communicated by him from time to time to the Society.

A special investigation, by request of the Lincolnshire Agricultural Society, is also being made by Professor Axe relative to the causes operating in the production of a somewhat serious development of abortion amongst ewes.

Scholarship and Coleman Prizes.

The Principal and Professors recommend that the Scholarship be awarded to Mr. A. Cawdle, also that the Coleman Silver Medal be awarded to Mr. Layton J. Blenkinsop, the bronze medal to Mr. John Morton, and certificates of merit to Mr. E. H. Hazelton and to Mr. W. H. Bloye.

C. N. NEWDEGATE, *Chairman.*

GLASGOW VETERINARY COLLEGE.

THE summer session of this institution terminated on July 20th, and on the 23rd and 24th, and August 2nd, the oral examinations of the Royal College of Veterinary Surgeons were conducted within the Museum of the College. The board of examiners included—Mr. George Fleming, LL.D.; Mr. J. Roalfe Cox, F.R.C.V.S.; Professor Duguid, F.R.C.V.S.; Professor Pritchard, M.R.C.V.S.; Mr. J. Vaughan, F.R.C.V.S.; and Mr. Finlay Dun, F.R.C.V.S., London; Mr. W. A. Taylor, F.R.C.V.S., Manchester; Mr. Geo. A. Banham, F.R.C.V.S., Cambridge; Mr. Archd. Robinson, M.R.C.V.S., Greenock; and Mr. W. B. Walters, F.R.C.V.S., Army Veterinary Department. The following gentlemen were also present as ex-officio members:—Principal M'Call, Professors Cooke and Macqueen, Glasgow Veterinary College. Twenty-two students presented themselves for the first examination, and of this number seventeen passed very creditably, viz.:—

Messrs. Edwin Sayer, Kent; William Hodgson, Cumberland; Hugh O. Richard, Merioneth; William Ferguson, Greenock; Thomas Dobie, Birkenhead; John M'Kinna, New Galloway; Donald M'Intyre, Argyll; David Weir, Ochiltree; William Carruthers, Lesmahagow; Thomas F. Renchan, Co. Kilkenny; D. J. M'Cambridge, Co. Antrim; Richard Hamilton, Ayr; John A. Cunningham, Glasgow; Charles J. Doyle, Co. Dublin; Hugh Farquhar, Kilmarnock; Andrew Reid, Ayrshire; and John Nicholson, Thornliebank.

Eight students also presented themselves for the second examination, of whom the following gentlemen passed:—

Messrs. George E. Gibson, Hull; Donald M'Lardy, Brodick; Robert M. G. Malloch, Braco; James G. Deans, Paisley; and George O. Macgregor, Bowling.

The following gentlemen obtained the membership diploma of the Royal College of Veterinary Surgeons:—

Mr. John J. Ross, Ballymena, Ireland; and Mr. Gordon Frew, Glasgow.

Medals granted by the Highland and Agricultural Society of Scotland and Principal M'Call, and certificates of merit by the college, were awarded in the different branches of study, as follows:—

Botany.—Silver medal (H. and A. S. of S.)—Mr. Edwin Sayer. First

class certificates—Messrs. Nicholson and M'Kinna. Second-class certificates—Messrs. Carruthers and Cunningham.

Chemistry.—Silver medal (H. and A. S. of S.)—Mr. Edwin Sayer. First-class certificates—Messrs. Doyle and Richards. Second-class certificates—Messrs. Farquhar, Weir, and Carruthers.

Materia Medica.—Silver medal (H. and A. S. of S.)—Mr. J. M'Kinna. First-class certificates—Messrs. Carruthers, Cunningham, and Sayer. Second-class certificates—Messrs. Weir, Wooley, and Reid.

Junior Anatomy.—First-class certificate—Mr. William Ward. Second-class certificates—Messrs. Cunningham and Sayer.

Best oral examination on Botany, Chemistry, and Materia Medica.—Gold medal (Principal M'Call)—Mr. Edwin Sayer.

At the close of the examinations the President of the Royal College of Veterinary Surgeons (Mr. George Fleming, LL.D.) intimated that Messrs. Doyle and M'Cambridge had passed with "great credit," and that Mr. Edwin Sayer had succeeded in passing with the honorary distinction of "very great credit."

ROYAL AGRICULTURAL SOCIETY.

AT the Monthly Council, held on August 1st, Mr. JABEZ TURNER said he appeared, under rather exceptional circumstances, to call the attention of the Veterinary Committee of the Council, and the Council generally, to a very severe, and, he thought, a somewhat exceptional attack of Foot-and-mouth Disease which was at the present time proceeding in his immediate neighbourhood (Peterborough). On May 3rd the disease broke out about five miles from his house, and it was pretty clearly understood that the contagion had been conveyed from the market at St. Ives. The case was reported to the authorities, and isolation duly took place; but in the course of that month several more outbreaks occurred. In the month of June the disease still proceeded. With all the precautions that were adopted, there were twelve new outbreaks in different places. Still the disease proceeded, and the precautions were, if possible, made more stringent than before; but in the month of July no less than thirty-one new outbreaks took place up till the 30th, and three more on the 31st. He thought these facts were of so peculiar a nature that he felt it his duty to state the case before the Council, and he would like to know if the Council would think it wise or proper to allow one of the Society's veterinary inspectors to go down and investigate the case, because he had it on good authority—the best of all authority—that none of these outbreaks in July could be satisfactorily accounted for. Although the animals had not been removed, the disease had gone from farm to farm, and there seemed to be no reason for it, except that the disease existed in the district.

In reply to Lord Egerton,

Mr. TURNER said that the markets were not closed, but the infected areas were proclaimed, and no cattle were allowed either in or out of the areas.

Mr. WELLS was unaware of Mr. Turner's intention to bring the matter forward, but was very glad that he had done so, as he also resided in the same neighbourhood, and the disease existed on two of his farms. Certainly there had been a very great and serious increase of disease in the neighbourhood, and the only hopeful remark which could be made was that it seemed to be of a milder type than that reported by Mr. Little last month. His own opinion was that so long as drovers and other people could move about and move cattle inside the infected areas, a great many of the precautions taken were nearly useless. He hardly knew whether it would be of any service to send a veterinary inspector down from the Society, but if it was thought so,

the agriculturists would be very glad of his advice. It was an excessively difficult thing to know what to recommend.

Lord EGERTON observed that what Mr. Turner had stated could be easily understood if there was free intercourse from one farm to another, either by drovers, butchers, farmers, or any one else. The disease must continue under such circumstances. In Cheshire a number of cases of disease could be traced to persons moving about from farm to farm. The utmost precautions should be exercised by farmers themselves in allowing persons to come on their farms.

Mr. TURNER added that during the previous outbreak in the winter, when the cattle were in the yards, the disease seemed to be kept tolerably well in check; but now the cattle were in the fields, it seemed to "jump about," so to speak, in the most extraordinary manner, from farm to farm, and from field to field; and in spite of all the existing restrictions, which were extremely inconvenient and disagreeable, the disease was spreading in the way he had shown.

Professor BROWN stated, in reference to the question of sending an inspector down, that one of the Government inspectors was now there making inquiries as to the concentration of the disease in that particular corner of the country. Unfortunately every step the Privy Council took in the direction of greater restrictions was met by very strong opposition. There were now before the Privy Council a large number of memorials from persons stating their conviction that the disease should not be treated so stringently, and the consequence was that the Privy Council were compelled to start an inquiry to see to what extent the places might be relieved. As to any attempt to interfere with the movement of persons, he imagined that no Government was strong enough to entertain the question. It was the sort of thing that could be done in Germany, but, he believed, in no other country. In no other country were the restrictions referring to Foot-and-mouth Disease so stringent as in England at the present time. He would shortly see Mr. Duguid's report, and if such seemed possible and desirable, he was quite sure that the Privy Council would be ready to impose further restrictions. But any increase of the restrictions, against the onerous nature of which people were now grumbling, would be met with further opposition; and he believed that unless the stock-owners were inclined to support the authorities, and unless the movement of animals was totally stopped within a certain space, there was absolutely no remedy that could be adopted. In conclusion, Professor Brown recounted the proceedings taken to avoid risk of disease, as well as to provide exhibitors at the York meeting with the necessary certificates for the removal of their stock, the whole of which left the show-yard in a healthy condition, and in a remarkably short space of time; and he added that there were no reports of any accession of Foot-and-mouth Disease from any district into which the exhibited animals were sent.

Lord MORETON recommended a plan which he had tried some years ago when disease existed on his farm. He had every gate tarred every morning, so that persons were very much disinclined to go on the farm.

Mr. WELLS thought that most of the agriculturists in the infected district would willingly submit to further restrictions.

Mr. TURNER concurred.

The subject then dropped.

PROCEEDINGS OF THE FIRST GENERAL MEETING OF THE NATIONAL VETERINARY ASSOCIATION.

(*Continued from page* 133.)

Mr. MACKINDER: As a country practitioner, where this disease is prevalent, perhaps I may be allowed to say a few words. There is at Peterborough a sewage-farm let to a number of cowkeepers, but I am not aware that Tuberculosis is more common there than anywhere else. My opinion is that the malady is infectious, and should be placed under legislative control. We should have difficulty in getting owners to report outbreaks of disease if they are only to be compensated at the low rate allowed by the Contagious Diseases (Animals) Act, and veterinary inspectors may find themselves placed in an awkward position. I think there should be more dairy inspectors. In one district in my neighbourhood an auctioneer inspects the dairies. The sooner it is placed in more efficient hands the better.

Mr. SANTY: I should like to ask Captain Russell whether he considers that "Angle-berries" have any connection with Tuberculosis, or whether they arise from an abnormal condition of the capillaries of the skin? We have in Lincolnshire a disease distinguished by swelling and ulceration on the outside of the lower jaw, called "Wens." These may be cysts containing matter of various kinds, sometimes liquid, formed along the parotid glands and down the cheeks. Is this Tuberculosis? There are in Lincolnshire hundreds of cattle thus affected, which are killed and used for human food. I scarcely know how the Legislature could deal with this disease; it is so easily transmitted. No doubt there are different causes of Tuberculosis in different localities. Mr. Olver speaks of sewage as producing it. I believe that the whole of our shorthorn herds are more or less affected with the disease, and that it is to a great extent produced by in-and-in breeding.

Captain RUSSELL: What are called "Angle-berries" in Lincolnshire is essentially a disease of the serous membranes of the abdomen and thorax. I have a very strong suspicion that "Angle-berries" have a connection with Tuberculosis. I am certain that they are hereditary. I have often had occasion to observe this. In a shorthorn bull I had to remove an excrescence from the penis, and on almost every animal that was got by him I had to perform a similar operation. I think that "Wens" are of tuberculous origin; I find that a single blister is a very good remedy for these. It is common in Lincolnshire to use nitric acid.

Mr. CAMERON: There is no doubt that the disease is contagious. I have known cases where a cow has been ill with Tuberculosis, and servants who have been on the farm for several years have told me that their cows have generally died in the same way. With regard to dairies, I have found the same difficulty as Professor Walley pointed out, viz., that we can only use moral persuasion. We require power, so that we shall be able to order the destruction of diseased animals. As to condemning affected carcases, I am afraid that if this were carried out too stringently the question would arise as to where the money was to come from for compensation. I think that if we condemn in the worst cases it is as far as we can go. I find that dairy cows are more affected than others. As to obtaining the introduction of this malady into the Contagious Diseases (Animals) Act, there is no doubt that very strong evidence would have to be produced before Government would consent. I think that the British Veterinary Medical Associations should petition for it to be so included. It has occurred to me that some of the funds of the National Veterinary Association might be set aside for the purchase of diseased animals upon which public *post-mortem* examinations might be held, and the general community made better acquainted with the condition of

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affairs. By this means we might obtain a large amount of public opinion to bear upon the question.

Professor McCALL: I had no intention of taking part in the discussion when I came here, but your President has asked me to do so. I think it will be merely a waste of time to discuss this subject too much in its strictly veterinary aspects. I propose to say a few words from the stock-breeders' point of view. Some may think that I am not justified in doing so; but allow me to say, gentlemen, that I have been a breeder of stock for about sixteen years, and have had from fifty to one hundred cows under my management. I am not an authority upon shorthorns, and after what I have heard at this meeting I have no desire to be so. I can, however, say that Tuberculosis is an exceptional disease amongst the Ayrshire breed of cattle. There seems to be some difficulty in understanding this subject of Tuberculosis. Are we to look upon a "tubercle" as indicative of Tuberculosis? Because, in that case, I think there are very few animals exempt from the disease. A large percentage of animals present one or more of these little bodies, but may it not be that they are not always indicative of Tuberculosis? Experiments have proved that certain hygienic conditions produce Tuberculosis. The most recent experiments have proved that setons are not likely to cause the disease; but it was not always thought so. I have all the dairies, slaughter-houses, and markets in Glasgow under my charge, and have ample opportunities for seeing this disease. In the dairies of Glasgow the malady is very common. Cattle, if left in the fields, would be exempt from Tuberculosis and live to an old age; when brought into a city they become affected with the disease. How is this? If Tuberculosis is hereditary, then it is to be presumed that it does not develop itself in the Ayrshire breed of cattle so long as you leave them to roam in the pastures; but as soon as you bring them into the city and feed them on stimulating food, they fall victims to Tuberculosis. I do not believe that *all tubercles* are expressive of Tuberculosis. I see animals affected with the malady standing about the markets of Glasgow, but have no power to deal with them. We must look to Mr. Cope and other gentlemen associated with him in the Veterinary Department of the Privy Council, to obtain for us the power to meet these cases. Until I see more evidence, I will not believe that every animal which shows, upon *post-mortem* examination, the presence of tubercles is affected with Tuberculosis. Until this is settled, I think that we should be very careful in what we suggest should be done by the authorities. I have seen bullocks in the markets in which you could detect nothing amiss, but when they were killed many tubercles were found.

Mr. HOPKIN: I can from my own experience endorse what Professor McCall has said. It does not matter whether we bring shorthorns or Ayrshires to town. In six or seven months they become affected with tubercles. If this disease is transmitted to the human species through the flesh of affected animals, then all the poor people in our towns ought to be suffering from Tuberculosis. I think those who know anything about our large towns will bear me out when I say that there is scarcely a home in them in which meat so affected is not eaten weekly. I do not know whether Tuberculosis is much more common amongst the children of the towns than of the country. We must not however overlook the fact, that the latter live under more favourable conditions than the former. Even if it is so transmissible by food, it is very slowly and insidiously developed. With regard to hereditary Tuberculosis, it may be twenty years before it shows itself. With some families the children show a tendency to it at certain ages. If we feed children on diseased meat will it produce Tuberculosis now or ten years hence? I had an assistant who came to me from one of the islands on the coast of Scotland. The family from which he came was healthy and strong, but when two of his

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sisters were young, their herd became infected with Tuberculosis. These girls were fed upon milk from the cattle. The two brothers, who were more fond of whiskey than milk, are still hale and healthy; the sisters are lying in their graves, victims to Tuberculosis. With regard to the inspection of animals, it is certainly most unsatisfactory. I think it ought not to be left in the hands of the local practitioner, who has his clients to consider. We have recently read that many of the tribes in Africa have no cattle, and that others possess large herds. I should like to ascertain whether Tuberculosis is known in Africa, and, if so, whether it is more prevalent amongst the tribes possessing cattle than among those who do not.

Mr. WILSON: I just rise to say a few words with respect to these miliary tumours. Are they associated with Tuberculosis? I have had a good deal of experience in connection with this disease. I remember the case of a cow which gave birth to two calves, both of which died of Tuberculosis. Shortly afterwards the cow was killed, and the whole of the interior of her peritoneum was covered with these small tumours. I believe Lord George Hamilton asked a question in the House as to whether, considering that Tuberculosis was now becoming so prevalent, and was known to be transmissible from animals to men, the Government would take some steps to place it under the Contagious Diseases (Animals) Act. I believe also that Mr. Mundella stated that the Privy Council had the subject before them, and intended to bring in a short Bill to place the disease under the influence of that Act. If this were done power would be given to have diseased animals killed. If the Privy Council would order that the local authorities should cause dairies to be inspected by a properly qualified inspector, and reported thereon two or three times a year, we should have a very different state of things to what we have now. As it is, the order says that the local authority *may*, instead of saying that they *shall*.

Mr. FLEMING: I will ask my own permission to speak again, in order to address you on one or two points with regard to the suggestions for discussion at the International Veterinary Congress to be held at Brussels in September next. And first, I should like to express the regret I experience that the medical profession in this country has not favoured the veterinary profession with a little more attention in this matter of Tuberculosis. I think that in a question like this, which so largely concerns the public health, it should have assisted us to arrive at some conclusion with regard to the best means of grappling with such a terrible disease. I do not claim absolute priority, but in 1873-4 I was so deeply impressed with the necessity for drawing attention to the malady, that I published a somewhat lengthy paper in the *British and Foreign Medico-Chirurgical Review*, basing my opinions upon investigations which were then going on, and especially on the trustworthy experiments of our lately deceased colleague, Professor Gerlach, of the Berlin Veterinary School, who demonstrated that this malady was transmissible by inoculation, by the ingestion of the flesh, and feeding with the milk of diseased animals. These experiments appeared to me to be such conclusive proof of the extreme danger to which the public was exposed, that I was astonished to find that what I had written fell absolutely without effect on the medical profession. It was not until the recent meeting of the International Medical Congress that the medical profession took up the question, and the reason of their doing so then was because certain medical men on the Continent were drawing attention to it. I am quite certain that if the medical profession would combine with us, we could, by our united efforts, bring so much pressure to bear upon our Legislature that the malady would be very much circumscribed in a few years. I make these remarks not in an ungenerous spirit, because I am aware that the medical profession in this country is not a whit behind its brethren on the Continent, and that it can boast of

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possessing some of the brightest ornaments in the domain of medicine. With regard to the suggestion of reporting by owners, this is, of course, one of the chief means by which you can ascertain the existence of the malady. Tuberculosis is a most difficult disease to diagnose, and one is astonished to find in the slaughter-houses the carcases of animals extremely infected, so that the reporting must be taken with a large amount of reservation. I think it would be better if the veterinary surgeon reported, but if he did so it is very likely that his client would not give him his patronage again. I think that the veterinary surgeon should notify the existence of the disease to the owner, and leave with him the onus of reporting the case to the authorities. I do not attach much importance to the opposition which this compulsory reporting would provoke. The value of certain herds of shorthorns is very great. So are studs of thoroughbred horses. When an outbreak of Glanders takes place in one of the latter, does the Privy Council listen to the objections of the owner? I think not. The spread of Tuberculosis will cause a thousand times more damage than the value of these cattle. With regard to the destruction of certain portions only of the carcases of diseased animals, we must remember that the laws of different countries vary. The suggestions which are alluded to are merely for discussion at the Congress. I think that every portion of an animal affected with Tuberculosis should be destroyed. The idea that setons produce Tuberculosis has been proved to be an error. We find nodules in animals, as sheep, which are not at all liable to attacks of Tuberculosis. I maintain that no matter what the nature of the nodule may be, if the bacillus is found, it may safely be concluded that it is a case of Tuberculosis. I hold Tuberculosis to be this, that apart from the physical character of the nodule or tubercle, it is an inoculable disease. I think that is the great diagnostic criterium of Tuberculosis. The tubercle is only an expression of a diseased condition. I am very glad that the propositions for the Congress were incorporated in Mr. Cox's paper, because I shall have the advantage of knowing the opinion of this meeting with regard to them. Although the malady is not taken under legislative control on the Continent, yet there is a general impression that it ought to be; therefore it has been made one of the major subjects for discussion at the International Congress. I do not attach much importance to the theory with regard to sewage. Of course the germs of Tuberculosis may be carried through the medium of sewage, but as we find the disease prevalent where there is no sewage, we should not lay much stress upon this point. We cannot separate without coming to some definite conclusion with respect to the subject of this morning's discussion. We have here, in Mr. Cope, an able representative of the Veterinary Department of the Privy Council, and I am sure that any decision we may arrive at will be utilized to the fullest extent by him.

The following resolution was then put to the meeting, and carried unanimously, "That in the opinion of this meeting, the Privy Council should include 'Tuberculosis' in the Contagious Diseases (Animals) Act."

Some discussion then took place with reference to the question of compensation. Some gentlemen expressing an opinion that owners of cattle could not be expected to have their animals slaughtered merely for the benefit of the community. The President said he thought that the question of compensation, as well as all other regulations required to eradicate this disease, should be left to the Veterinary Department of the Privy Council, and that, if the regulations at present in force, with regard to compulsory slaughter, were applied in this case the public would be satisfied.

Mr. J. H. Cox: After what has emanated from the meeting, there is very little for me to say. I should, however, like to refer to one or two remarks that have fallen from Professor Walley. He says that the fibrous tumours

are only a question of degree, and that they are identical with those of the human subject. But many eminent pathologists have claimed that they are of a different nature, and that though they may be called a kindred species, yet they are not the same in reality, the difference consisting in the presence or absence of the pedunculated appearance. Professor Walley says that the bacilli die from want of air, but if they die in the centre of the tubercle, why not in the periphery cells? It was also stated that "vomicæ" expresses a "spitting out," whereas it really means a combination of one or more tubercles that have undergone degenerative changes. I agree with Mr. Santy that shorthorns are more liable to the malady than other breeds of animals. The condemnation of meat is a question of great importance, and the experiments carried out in France are not conclusive enough in their results to warrant us in destroying the whole carcase. I should like to know when the meat should be destroyed? or in other words, at what stage of the disease does the muscular structure become affected? If in the first stages, we should have to slaughter twenty-five per cent. of the cattle in this country. Professor McCall refers to two classes of Tuberculosis—infective and non-infective. The small miliary tubercles have very often no connection with Tuberculosis, and are not infectious in their nature.

Mr. T. D. LAMBERT (Dublin): I was pleased to hear the remarks that have been made, especially those which have fallen from Professor McCall. I think the best practitioner might find it hard to distinguish between Tuberculosis and Pleuro-pneumonia. I have many opportunities of making *post-mortem* examinations, and find many cases of the malady, but never in animals from the country.

Mr. MALCOLM (Enniscorthy): I have had experience in Ireland for the last twenty years, and have made hundreds of *post-mortem* examinations on cows and calves (on the latter before they were two days old). I think it is one of the most common diseases we have to contend with, and that it will take many years to eradicate it. I quite agree with Mr. Lambert that it is sometimes very difficult to diagnose between Tuberculosis and Inflammation of the lungs. Consumption will never be absent from the human species whilst it is present amongst animals.

MAJOR SUBJECT II.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, AND HOW FAR IT MAY BE EXTENDED AND IMPROVED,—COUPLED WITH VETERINARY SANITATION.

BY THOMAS WALLEY, PRINCIPAL IN THE ROYAL (DICK'S) VETERINARY COLLEGE, EDINBURGH.

THE aim of a paper written for the purpose of exciting a discussion on a given subject should, I take it, be to direct attention to its most important and salient points, and not to leave, by dealing with the matter exhaustively, no room for differences in opinion amongst those who have to discuss it.

Keeping this idea in view, I have in the following remarks been as brief and concise as I thought would be consistent with lucidity, leaving the blanks, statistical or otherwise, to be filled up in course of discussion by those who may think it necessary to do so.

Briefly, then, in the first instance, I desire to direct the attention of members to the contrast which exists between the past and present methods of dealing with the contagious diseases of animals in these realms.

In my early days, inertia and fatalism marked the proceedings that were initiated for the prevention or suppression of these maladies; such regulations

as were in force were of the mildest character, and, in fact, any check that was placed upon their dissemination was rather of a moral than of a legislative nature, consequently contagious diseases were allowed to run riot over the country, and those in whose herds or flocks they made their appearance thought only of how they could get rid of their infected stock, without giving one moment's thought as to how much they were damaging their neighbours and the country at large. This condition of matters existed up to the date of the great and ever-memorable outbreak of Cattle Plague, and even this was not effectually grappled with until many thousands of animals and some millions of money were sacrificed to the temporising policy of those who had the direction of Veterinary Sanitary Science. I think all those who have studied this matter will agree with me in the assertion that the beneficial change which has taken place has resulted, firstly, from the fact that an alien to the profession was replaced as head of the Veterinary Department of the P.C. by a Veterinary Surgeon who is thoroughly acquainted with the subject with which he has undertaken to deal, and who is capable of giving sound advice upon all matters connected therewith ; secondly, from the repeated representations of members of our profession ; and, thirdly, from the pressure put upon the Legislature by those interested in the breeding and feeding of animals.

Not only have stringent measures been adopted in dealing with disease amongst home stock ; they have been directed also against the importers of disease from other countries, and while I am not prepared to assert that we have nothing left to learn on this subject, I do unhesitatingly say that the improvements which have been effected in our prophylactic machinery have been very great, and it will be my endeavour to show how, in my opinion, that machinery may be made to work still more efficiently and successfully.

The application of legislative measures to imported is far more difficult than it is to home animals, as so many important interests are directly and indirectly involved ; and in nothing is the difficulty more apparent than in the keeping up of a supply of food agreeable to the palate of our great flesh-consuming community.

I shall be able to make myself more intelligible, and the discussion of this paper more profitable, by dealing separately with those diseases which are recognised as of a contagious nature by the C. D. (Animals) Act, in the first place ; and in the second by directing attention to a few important maladies not so recognised.

One of the oldest and most important of our bovine scourges is *Pleuro-pneumonia*, a disease which for many years was allowed to run riot through the country, decimating, in some cases over and over again, many of our best herds, and paralysing the energies and emptying the pockets of stock-raisers in every direction.

The contrast between the extent of its ravages in the past and the present is very great ; but even while I allow that the measures adopted in dealing with the malady are tolerably effectual, I must point out that in several important particulars they are still very defective, and in no respect is this more marked than in the provision of the Act which allows the owners of cattle, amongst which the disease is detected, while exposed in a public mart or market, to remove those in whom no outward sign of the disease is apparent.

Were all animals so exposed intended for slaughter, this *greatest flaw in the Act* would not be of much consequence, but in how many instances are the animals so exposed store cattle, and into how many different lots may they not be divided, each lot carrying with it the germs of the disease, and each lot acting as a separate centre for its dissemination? Whatever doubt may exist as to the advisability of immediately slaughtering every animal in

a particular herd amongst which the disease has been introduced, there should be no doubt, no hesitation, in enforcing this most radical measure in the case of animals exposed in open market.

Almost any measure would be preferable to the present system, harassing as it sometimes is ; and not only harassing, but often uncertain, as within a few hours or days after the expiry of the period of segregation, the disease may again make its appearance, or some member of the herd may have suffered from a masked attack, and become a wholesale and unsuspected disseminator of its germs amongst animals with which it may subsequently associate.

(*To be continued.*)

THE EXAMINATIONS IN LONDON.

At the meetings of the Court of Examiners of the Royal College of Veterinary Surgeons, held on the 9th and 10th July, 1883, the following students from the Royal Veterinary College were admitted members of the profession.

Mr. George Thos. Pickering ...	New Walk Terrace, York.
„ Evan P. Evans	New House, Castleton, Cardiff.
„ Robert Hill	Milton, Stoke-on-Trent, Staffs.
„ Henry Thos. Pease ...	Rusholme Hall, near Selby, Yorks.
„ William R. Bull	Trusley, Etwall, Derby.
„ Charles Morgan	Rhiweleplin, Abergwili, Carmarthenshire.
„ Jas. Thos. Twiss	Ashford, Co. Wicklow, Ireland.
„ Wm. F. Shaw	Hackney, London.
„ Geo. Wm. Beck	Pontefract, Yorks.

The following students passed their "Second Examination" on 11th July 1883:—

Mr. A. E. Richardson.
„ Fredk. A. Moss.
„ Wm. Jas. Moses.
„ G. Stear.
„ G. W. Roberts.
Mr. *J. F. Farrington.
„ *A. V. Field.
„ *John Brett.
„ P. G. Luff.
„ *A. Macraith.

The following students passed their "First Examination" on 12th, 13th, 14th, and 16th July, 1883:—

Mr. W. Blunsom.
„ J. Cooper.
„ F. P. Santy.
„ A. Johns.
„ R. Richards.
„ G. H. Pickwell.
„ A. T. Farr.
„ *G. S. Arkcoll.
„ W. E. Cawdle.
„ *A. Cawdle.
„ †J. Blakeway.
„ G. Goodliffe.
„ P. D. Langley.
„ W. Ascott.
„ F. W. Melhuish.
„ J. E. Shoolbraid.
Mr. †W. Littlewood.
„ *A. Marriott.
„ G. Boulton.
„ A. H. Beeby.
„ A. E. Shorten.
„ *M. G. Byerleg.
„ E. Ebbetts.
„ C. Griffith.
„ *H. Buckingham.
„ A. H. Pope.
„ H. J. Dawes.
„ *A. Brassington.
„ †C. Winteringham.
„ *E. R. Smythe.
„ *G. H. Gibbings.
„ *W. R. Walker.
Mr. F. Eassie.

* Marked thus passed with Great Credit.
† Marked thus passed with Very Great Credit.

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THE EXAMINATIONS IN SCOTLAND.

AT meetings of the Scottish Section of the Court of Examiners of the Royal College of Veterinary Surgeons, held in Edinburgh and Glasgow on and between July 23rd and August 2nd, the following gentlemen passed their "Final Examination" and were admitted members of the profession :—

Glasgow College.

Mr. John James Ross	... ...	Ballymena, Co. Antrim.
„ Gordon Frew	... ...	Glasgow.

Edinburgh New College.

Mr. John Young	... ...	Cockermouth, Cumberland.
„ Robert E. White	... ...	Tadcaster, Yorkshire.
„ Patrick J. Culhane	... ...	Charleville, Cork.
„ Daniel O'Leary	... ...	Knockany, Limerick.
„ William Scott	... ...	Clonmel, Tipperary.

Edinburgh Old College.

Mr. David J. Barry	... ...	Limerick.
„ William Kirk	... ...	Rampore Haut, Bengal.
„ Robert F. Grossart	... ...	Carstairs, Lanarkshire.
„ Thomas H. Rochfort	... ...	Miltown, Co. Clare.
„ Murray Lornie	... ...	Errol, Perthshire.

The following passed their Second Examination :—

Glasgow College.

Mr. J. Gowans Deans.
„ George E. Gibson.
„ Donald McLardy.
Mr. Robert M. Malloch.
„ George O. McGregor.

Edinburgh New College.

Mr. Isaïe Nadal.
„ Gerard Hulme.
Mr. Francis C. Golden.

Edinburgh Old College.

Mr. William T. Jones.
„ George C. Robertson.
Mr. Timothy J. Daly.
„ *John Riddoch.

The following passed their "First Examination :"—

Edinburgh New College.

Mr. W. Bannatyne.
„ C. Drabble.
„ *Thos. Anderson.
„ Thos. Duckworth.
„ Thos. Peacocke.
„ A. B. Chamberlain.
„ *R. B. Porch.
„ James Bell.
„ John A. Hodgman.
„ *Robert Price.
„ F. W. Somers.
„ Wm. Chadwick.
„ *Charles Galloway.
„ Wm. Fenwick.
Mr. *Alexander Kay.
„ Thos. Shepherd.
„ Fred. Sweeting.
„ B. W. Bloomfield.
„ *George W. Simpson.
„ *Richard W. Dawtrey.
„ Tom Secker.
„ William Noar.
„ *G. W. Lancely.
„ *J. A. Robinson.
„ †John Moore.
„ W. N. A. Harris.
„ *W. D. Connochie.

Edinburgh Old College.

Mr. Wm. Hodge.
„ A. W. Davies.
„ John Armstrong.
„ John Barr.
„ George Kinnell.
„ *John Whitecross.
„ Solomon Frost.
„ John S. Lloyd.
„ Percival Snaith.
„ John Troughear.

Mr. Lawrence Power.
„ *Robert Reid.
„ John Hawke.
„ *Henry Rickell.
„ Edward Griffiths.
„ Alexander Levie.
„ Frank Ball.
„ Henry Taylor.
„ R. E. Thomas.
„ Fred. Tonar.

Glasgow College.

Mr. John Nicholson.
„ Andrew Reid.
„ Hugh Farquhar.
„ *Charles J. Doyle.
„ John A. Cunningham.
„ Richard Hamilton.
„ *D. J. McCambridge.
„ William Carruthers.
„ David Weir.

Mr. D. McIntyre.
„ John McKinna.
„ Thomas Dobie.
„ Wm. Ferguson.
„ Hugh O. Richard.
„ William Hodgson.
„ †Edwin Sayer.
„ T. F. Renchan.

* Marked thus passed with "Great Credit."
† Marked thus passed with "Very Great Credit."

Reviews.

A Text-Book of the Practice of Equine Medicine. By William Robertson, F.R.C.V.S., etc. (London: Bailliere, Tindall, and Cox. 1883.)

Professor Robertson has done the student and practitioner of veterinary medicine a good service, in presenting them with this text-book of horse pathology, which appears to us to be in every way worthy of the Principal of the Royal Veterinary College. There was ample room—indeed, there was great need—for a book of this kind, as since the publication of Percivall's "Hippopathology" there has been no special systematic treatise on the diseases of the horse. The present attempt to supply the want is evidently a most successful one, the arrangement being good, while the treatment of each disease is characterised by erudition, clearness of diction, and that amount of practical and scientific knowledge combined, which might be expected from one who was until recently engaged solely in the practice of his profession, and pursuing it with a great reputation as a sound and advanced veterinarian. The subjects are written well up to date, and, as a rule, everything in the shape of recent research regarding them is alluded to, while the author's own views are freely expressed on points which are yet debatable. As might have been expected, the work is of an eminently practical character, and as such is well adapted to serve the purpose for which it was written.

Professor Robertson has performed a difficult task with signal ability, and well merits the thanks of the veterinary student and busy practitioner; while the publishers deserve recognition for the manner in which they have placed the work before the public.

LES ALLURES DU CHEVAL. Par EDOUARD CUYER. (Paris: J. B. Baillière et Fils. 1883.)

This is another of those now numerous works produced in France, on what might be designated "conformation of the horse." The present treatise deals more particularly with the paces of that animal, which are demonstrated in a very ingenious manner by means of the cut-out figure of a horse, divided into sections, which are superposed and articulated; so that the various attitudes can be shown by placing this figure on sheets of stiff paper, on which the positions of the feet are delineated, as guides for demonstrating these attitudes. This very simple and clever plan has been devised by M. Cuyer, who is prosector to the National School of Fine Arts in Paris, and Professor of Anatomy at the Fine Arts School of Rouen, and it is supplemented by an excellent introduction by M. Duval, Professor of Anatomy at the Fine Arts School in Paris. This introduction, as well as the views entertained with regard to the position of the limbs in progression, derive their inspiration from the investigations of Marey, as well as the application of instantaneous photography to delineate living creatures in motion. As a means of showing satisfactorily how a horse walks, trots, gallops, and performs other movements, Cuyer's articulated plate answers admirably.

Jurisprudence.

CAN A COW HAVE GLANDERS?

AT Wolverhampton, on July 13th (before W. F. F. Boughey, Esq., stipendiary magistrate), Henry Stroud, cattle dealer, Banbury, appeared to two summonses charging him with causing to be sent by rail a diseased or suspected animal; and next, cruelty to a cow. Mr. H. B. Hill appeared in support of the charge, and Mr. R. A. Willcock defended.

Mr. Hill said that on the twenty-fourth June last Inspector Dawson, an officer of the Society for the Prevention of Cruelty to Animals, noticed two beasts—most hideous animals—being taken along Bilston Street to the cattle-market. Dawson at once inspected them, and then drew the attention of the medical officer of health for the town, of the sanitary inspector, of Mr. Hill (veterinary surgeon), and of Mr. Newnham, one of the borough magistrates, to them. The animals were at once condemned as being altogether unfit for human consumption, and ordered to be killed; and on a *post-mortem* examination being made of them, the cow was found to be suffering fearfully from Cancer, which, however, was not a disease comprised within the meaning of the Contagious Diseases (Animals) Act, under which the charge was brought, and was badly affected with Glanders. The animal

was not a stranger to his Worship, as a man had been fined for exposing it in the Cattle Market. The most serious case against the defendant was, apart from that of cruelty, in sending, or causing to be sent, such an affected animal along the railway and public thoroughfares into a public market, with the object of having the beast converted into food for human consumption. After reading the clauses of the Acts under which the prosecution was instituted, Mr. Hill went on to say that he understood several veterinary professors from different parts of the country were to be examined to show that Glanders in a cow was of very rare occurrence. That, however, would not prove that such a disease could not exist in a cow, but witnesses for the prosecution would be called, who would speak from what they saw on the beast being examined.

Inspector Dawson having spoken to the appearance of the animals on their being taken into the Cattle Market, David Stevens, cattle foreman, deposed that he had received a consignment note with the two animals from Banbury.

Mr. J. Woodroffe Hill, F.R.C.V.S., said that the defendant called at his house on the 27th June, inquiring who was going to pay him for the two beasts, and witness replied he could not say; he had better go up to the Town Hall. The defendant said he had never heard of a beast with Cancer being taken from a man before. Early on the same day he was called to the London and North-Western station to see the cows, but they had been removed to the Cattle Market. On going there, he found the cow with its head enormously swollen, particularly across the nostrils, the measurement across the nose being exactly the same as across the horns. The lower portion of the face and the lips was denude of hair with the exception of one or two scant patches. There was a discharge from the nostrils of a dirty glutinous material, mingled with blood, and when the animal snorted a large mass of this matter came out of the nostrils. The nostrils were so much swollen that they looked like two round holes, their natural shape being entirely lost, and the animal had the greatest difficulty in breathing. He made a *post-mortem* examination of the body of the cow at the horse-slaughterer's, and found the miliary tubercles towards the edges of both lungs; the liver was also full of tubercle. A similar condition existed in the liver of the bullock, both the heads and a portion of the liver were removed to his infirmary for further examination. On dividing the head of the cow down the centre he found, on the left side of the membrane covering the septum nasi, one veritable or true chancre, two partially developed ones, and a little above these, a group of eight nodules, whilst higher up was a stellate-shaped cicatrix of a healed ulcer. On the right side there was one large ulcer. The schneiderian membrane in each nostril was of a dull leaden colour, streaked with blood lines and pus. The submaxillary gland on the right side was enlarged. These conditions were distinctive indications of Glanders. An examination of the bullock's head showed that incipient Glanders existed in that beast. In cross-examination, witness said he could not tell the period of incubation of Glanders in cattle; no one could tell at present. It was not a case of pyæmia. He had been in practice for seventeen years, and had never seen a glandered cow until this one, but it had been produced in other ruminants, also in poultry and rabbits. Dogs, until recently were considered exempt, but this year there was overwhelming evidence to the contrary, and so it might be in cattle. The discharge was continuous though collective. He did not agree with the opinion given by Steele in his treatise on the "Diseases of the Ox," respecting the disease of Glanders. He considered Dr. Fleming by far the highest authority. This was certainly not a case of malignant catarrh. The animal was decidedly glandered.

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Mr. C. A. Newnham, surgeon, corroborated the evidence of the last witness, and added that, as a magistrate, he ordered the animals to be destroyed as unfit for human food. He further added, the cow was greatly distressed, heaving at the flanks, the nostrils were blocked with bloody mucus mixed with matter, and when snorting she snorted the same matter out. The tongue and lips were blue owing to the difficulty of getting air into the lungs. At his request the heads of both animals were taken to Mrs. Hill's for examination. Witness found the nasal mucous membrane ulcerated. He considered it a case of Glanders.

Cross-examined: The salivary glands were enlarged. He wouldn't disagree with Professor Pritchard that cows under all circumstances breathed through the mouth. Witness here described the anatomical difference between salivary and lymphatic glands. He had not seen a case of malignant catarrh.

Re-examined: He had made the *post-mortem* examination on the bullock's head himself, as to the Cancer; found an indurated submaxillary gland, but couldn't say if an indurated gland was indicative of Glanders. He didn't see the inside of the nasal chambers.

Mr. J. H. Love, surgeon, deposed that on the 27th June last he was acting as medical officer of health for the borough. He examined a cow at the Cattle Market suffering from Cancer, and he confirmed the testimony of the previous medical witnesses with respect to the disease of Glanders. Coloured illustrations executed by Mr. J. W. Hill, depicting the appearance of the heads and nostrils were at this stage put in as evidence, their truthfulness being attested by the medical men, though objected to by Mr. Willcock, as not being drawn to a scale.

Mr. Willcock was about to examine the witness with regard to evidence he gave respecting a woman in a criminal case in order to show that he had made a mistake respecting the "anatomy of the human frame," but the stipendiary objected; stating it was an exhibition of bad taste, and advised Mr. Love not to answer him.

Cross-examined: He knew a great deal about veterinary matters, but had not seen malignant catarrh in cattle, or Glanders, until this case. He was suspicious of the discharge at the time he saw the cow alive.

Mr. Blanton, inspector of nuisances, deposed that he saw the head of the bullock put into a bag and taken to Leach's yard, for the purpose of *post-mortem* examination.

Mr. Joseph Leach, horse slaughterer, said the indications of the cow were similar to those of a horse suffering from Glanders. He opened the head at Mr. Hill's. It was very badly ulcerated, exactly the same as he should find in the head of a horse suffering from Glanders. He had seen hundreds of such cases in his vocation. In cross-examination, he acknowledged that during the whole of his forty years' experience he had never known before of a cow suffering from Glanders.

For the defence, Mr. Willcock contended that it was impossible, in the opinion of the highest veterinary authorities, for a cow to be attacked with Glanders, the disease being solely confined to horses, asses, or mules. He should call professional witnesses who would prove that in the whole course of their experience they never heard of a glandered cow. It was impossible ever to inoculate Glanders in a cow. Witnesses would be called to show that the cow in question was kept in a field from the beginning of May to the 26th of June, and none of the horses that were with it in the field had suffered from Glanders.

Professor William Pritchard was then called. He said he practised in London as a veterinary surgeon, and for twenty years was a teacher at the Royal Veterinary College, was a member of the Council of that College, and one of the Board of Examiners for England and Scotland. He was

intimately acquainted with the disease known as Glanders. He never knew of a glandered cow, and did not believe it possible for a cow to have Glanders. He should not hesitate to turn a cow into a field with horses suffering from Glanders. He had attempted to inoculate a cow with Glanders from a glandered horse, and failed. He attempted with the same cow several times, but not from different horses. Professor Simmons also attempted, and failed. He disagreed with the evidence of Mr. J. W. Hill, that a stellate cicatrix could exist without the whole of the lungs being tuberculed, and some going into abscesses. Tubercle in the liver was no indication of Glanders. In very old cases an abscess might be found, but not the characteristic tubercle of Glanders. The discharge at the nose of a glandered animal was continuous and regular. He did not consider the disease in the cow now referred to was one of Glanders. Cross-examined: He lectured on anatomy on animals at the Royal Veterinary College for over fourteen years, and made hundreds of *post-mortem* examinations. Scores of cows had been exposed with glandered horses, and were never attacked with the disease. Animals, through peculiar idiosyncrasy, might be unsusceptible to contract disease. Had made experiments on horses, asses, and mules, but upon no other animals. George Fleming was the greatest writer of the present day, but the cases he quoted were what others had stated, not what he himself had witnessed. The discharge of Glanders was continuous and regular. If mixed with blood, should infer there was ulceration, but there were other diseases where the same thing occurred. The discharge could not collect, there being no cavities in the nostrils. A cow hadn't a false nostril the same as a horse. The discharge couldn't collect there and be snorted out without going against gravity. By the Stipendiary: There was a difference of opinion as to the function of a false nostril.

Cross-examined: He inoculated the cow with an ordinary lancet inside the vagina and nose. He did not think the discharge would collect from the edges of the nostrils swelling up. He had never seen a case of Glanders where the symptoms were localised. He did not agree with Professor Garside's reported cases in the VETERINARY JOURNAL. He knew the Brown Institute; he also knew Dr. Burdon-Sanderson, and that Professor Garside originally assisted there. He was not aware that Government aided experiments there by grants. If the cases were of such recent date, he should have thought more would have been heard of them. He was not aware that it was supposed at one time that human beings were not susceptible to Glanders. He had unfortunately lost a brother through it. He was not aware that goats were susceptible to the disease.

Mr. E. Beddard, M.R.C.V.S., Wolverhampton, said his practice lay chiefly amongst cattle, and he had never, during his twenty years' experience, heard of Glanders amongst cows. He could not say that he had known cows to be kept in company with glandered horses. In cross-examination he said he did not see the *post-mortem* examination of the body of the cow made, but he did not think this was a case of Glanders, or that the discharge was characteristic of Glanders.

By the Stipendiary: The case was Scrofula. Cross-examined: It might be Cancer. He recollected Mr. Pritchard, sen., confirming Mr. J. W. Hill's opinion in a previous case of Glanders, where he (witness) had considered it otherwise. He had not mistaken another case until it was demonstrated by Mr. Hill inoculating a pony. He should differ from Mr. Hill because of the healed ulcer.

Mr. Robert Cartwright, M.R.C.V.S., spoke to examining the beast in question and another on the 27th June last, and passing them as being free from Foot-and-mouth Disease. During his examination he saw no symptoms of

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Glanders, and he had never heard of Glanders among cows. In reply to the Stipendiary, the witness said he only examined the beasts to see whether they were free from Foot-and-mouth Disease. Cross-examined: He was speaking from his own experience, had only examined the animals for Foot-and-mouth Disease; he had seen a few cases of Glanders; he was not aware a horse he had condemned was alive and well. It was not contrary to law to keep glandered horses alive.

By the Stipendiary: He considered the discharge due to chronic catarrh.

This being the whole of the evidence offered for the defence, the Stipendiary said there was a very strong presumption at present that Glanders could not be found in a cow. Therefore, under these circumstances, and finding a difference of opinion in the medical evidence, he could not convict.—Mr. Willcock remarked with regard to the second summons against the defendant for cruelty, that Professor Pritchard would speak as to the effects of Cancer, as far as cruelty to the beast and its removal were concerned. Over two hours were occupied in driving the animal four miles, and there was evidence to show what took place from the railway-station to the market.—In the course of further discussion, the Stipendiary said he dismissed the case he had just heard from want of actual proof.—Mr. Willcock asked to be allowed costs, as, under any circumstances, the defendant, who gave £20 for the cow, was bound to be a loser by it.—The Stipendiary, however, declined to allow costs.—Mr. Willcock said that during the hearing to-day the defendant had been served with another summons returnable on the 28th inst., charging him with unlawfully depositing in the market a cow unfit for the food of man.—Mr. Hill said he knew nothing about that summons, and Mr. Green (magistrates' clerk) said his court knew nothing about it.—Mr. Blanton (sanitary inspector) said it was taken out by the order of the Sanitary Committee.

It being six o'clock, the Stipendiary adjourned the summons for cruelty until that day month.

The hearing, which lasted over four hours, created considerable interest, especially among butchers and dealers, of whom there was a large attendance.

FOOT-AND-MOUTH DISEASE: IMPORTANT DECISION.

SOME time ago Mr. William Harkness, of the Dead-Meat Market, sued the Lord Provost, Magistrate, and Town Council of Glasgow, acting as the Local Authority under the Contagious Diseases (Animals) Act, for £9 19s. 7d., being loss, injury, and damage sustained by him through the defenders' inspector having, on the 11th and 13th February last, seized and condemned portions of fourteen bullocks belonging to pursuer, which he had slaughtered in Moore Street Slaughter-house, the condemned portions being boiled down and the proceeds confiscated. Sheriff-Substitute Mair, after hearing evidence on the 7th April, found the defenders liable to the pursuer in expenses. The defenders lodged an appeal, and Sheriff-Principal Clark issued the following interlocutor yesterday, in which he finds neither party entitled to expenses:—

Having heard parties' procurators, and considered the evidence and whole process, finds that the portions of the bullocks in question were seized and carried away from the pursuer's custody or possession, and boiled down as being more or less affected with the Foot-and-mouth Disease, and unfit for human food: Finds that the defenders are responsible for these proceedings, and that, technically, there was a departure from the statutory provisions and rules applicable thereto: Finds, however, that the portions of the animals so carried off and boiled down were unfit for human consumption, the purpose

to which the pursuer intended to apply them: that consequently no damages are proved: Therefore recalls the interlocutor appealed against, and assoilzies the defenders from the conclusions of the summons, but in the special circumstances finds neither party entitled to expenses, and decerns.

Note.—I am at one with the Sheriff-Substitute in holding that the course adopted was irregular and technically illegal in seizing and boiling down the portions of the bullocks in question, and that the defenders, charged as they are with and responsible for carrying out the statutory provisions, are responsible therefor. The portions of meat alleged to have been affected ought to have been brought before and adjudicated upon by the proper magistrate, or the mode of submitting them to two respectable dealers in the trade should have been followed. Nor can I admit that the mere imminence of a serious epidemic of Foot-and-mouth Disease could in any way justify a departure from the plain statutory provisions. At the same time, the important question remains—has the pursuer succeeded in proving loss or injury? for unless he can establish this, it necessarily follows that no damages can be assessed. With this question the greater part of the voluminous evidence that has been led on both sides deals, and it will be necessary to consider that evidence at some length. Now, in the first place, it seems to me proved that all the separate portions or organs of the bullocks for which damages are claimed were more or less affected by manifestations of the disease. By a skilful cross-examination it was attempted to show that some part at least of the portions dealt with as diseased did not belong to the pursuer. On a careful and repeated perusal of the evidence, I am satisfied that there is nothing in this contention, and that all the portions for which damages are claimed were really examined, and found to be more or less affected by the disease. Some of them were very considerably affected, others at certain parts only. The pursuer, however, contends—and this indeed forms the main contention—that though an organ—a tongue, for example, or a head—is affected at one point, the whole organ is not to be condemned, but that the diseased part having been excised, the remainder is quite wholesome, and may be sold for human food without let or hindrance, as much as any other part of the carcase. Of course, if this could be made out the pursuer would be entitled to recover for the loss of price which the remainder of the organs, after the excision of the diseased part, would have brought when exposed in the market. Now, it is admitted on all hands by the veterinary witnesses that the Foot-and-mouth Disease is a blood-poison, and that it is one of the most infectious and contagious diseases to which cattle are liable. It is also proved that it eliminates itself by certain organs, such as the tongue, the mucous membrane—including the stomach, the palate, the feet—in short, by all the organs for the value of which the present action is brought. From this one would naturally conclude that these organs are seats of the disease, and that when the outward manifestations of the disease, such as blisters or excoriation, appear, or any one of them, the whole of that organ is more or less charged with the disease. But this is not a mere layman's inference. It is clearly established by veterinary evidence; even Professor Walley, who is most favourable to pursuer, does not seem to deny it in theory, but bases his view on the assumption that when the diseased part of an organ has been cut away the remainder is fit enough for human food. That matter, however, is not one as to which his opinion can be taken as conclusive when it is contradicted by medical men of eminence intimately acquainted with human physiology, and perfectly able to state whether food of this kind can be safely taken by human beings. Now, it is a remarkable fact that there is not a single medical man adduced who can be got to say that every portion of an organ upon a part of which the symptoms of the disease have manifested themselves can be consumed by human beings without risk.

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Their evidence is indeed strongly the other way. Professor M'Kendrick, Dr. Russell, Dr. Littlejohn, Professor Cleland—all men of great eminence in the profession—unite in condemning in the strongest terms the practice of using for human food the remains of organs from which the diseased parts have been excised. Dr. Littlejohn goes so far as to say that not the organ affected only, but the whole carcase of the animal should be declared unfit for human food; and Professor Cleland boldly says—"I think it is a very dreadful thing selling these things to people without letting them know." It should also be noted that Principal M'Call and Professor Williams—both men of recognised eminence as veterinarians, the latter a witness for the pursuer—strongly condemn the practice contended for by the pursuer. Professor Williams says—"If the tongue is affected I should condemn the tongue." Question—"When you say affected, what do you mean?" Answer—"If it is at all excoriated; if it is raw in any way; if there have been blisters upon it." Question—"That is a question of more or less, I suppose?" Answer—"No; I should condemn the whole tongue." Principal M'Call is equally emphatic, and gives certain rules, which he only regrets he has not the power to enforce, but which, if enforced, would entirely exclude the pursuer's contention in practice. The pursuer finding that his contention could not be sustained by the opinions of experts, betakes himself to the alleged fact that the practice of the Edinburgh Slaughter-house is in his favour. It is much to be regretted that the principal officer of that place, Mr. Sommerville, whose name is mentioned as the best authority, was not called by the pursuer. The reason, however, suggests itself when it is found that Dr. Littlejohn denies that any such custom exists. I take it, therefore, to be clear that where an organ such as those in question is affected in any one part, it is the opinion of the most reliable medical and veterinary experts that the whole organ is unfit for human food. Indeed, I think this is so clear, after the evidence that has been adduced in this case, that any parties in the position of the defenders authorising or sanctioning a contrary practice, would assume a very grave and serious responsibility. Now, what was it that the pursuer proposed to do, and would have done but for the action of the defenders, irregular though in technical details that action may have been? Plainly to have sold for human food what remained of the tongue or other organ after the ulcerated part had been cut off. The pursuer makes no difficulty about this. Both he and his witness Brechin—another butcher—admit this to be their practice. The pursuer, indeed, coolly made this the basis of his plaint, and asks the Court to assess damages on the ground of his not having been allowed to do this. These diseased organs were to have been sold without any advertisement to the public of their being part of diseased tissue—they were to have been sold as sound, good meat. No wonder that Dr. Cleland characterised such a suggestion as dreadful, and yet it is for not having been allowed to do this that damages are claimed. It was suggested at debate that the pursuer should at least have the value of the articles so boiled down for tallow. In answer to this it may be said that he makes no such claim in his deposition; that is not the ground of his alleged damage; and besides, it is proved that after deducting the cost of the boiling down process nothing appreciable would remain. After what is stated above I think it approaching the ludicrous to contend that any damages are proved. The pursuer has much reason to be thankful for any accident or irregular act that put it out of his power to sell as wholesome food what might have produced the most serious consequences to the unsuspecting public. It is unnecessary to say why I have found no expenses due to the pursuer. Why they have not been awarded to the defenders is because their procedure, though in its results beneficial to the public and also to the pursuer, involved a legal irregularity which might with ordinary care have been avoided.

Obituary.

THE death is reported of L. T. Barker, M.R.C.V.S., Conisbro', Yorkshire, who graduated in 1874; and of James Dobbyn, Waterford, graduated November, 1879; Alfred Rushall, Bishops-Stortford, graduated April, 1846; James Kerr, London, graduated April, 1825.

The demise is also announced of Alex. Grey, M.R.C.V.S., Edinburgh, a graduate of 1836. He was one of the oldest and most widely-known veterinary surgeons in the Scottish capital, and was much esteemed by a large circle of friends.

Professor Tombari, Director of the Milan Veterinary School, died last June.

Though only indirectly affecting the interests of the veterinary profession, yet because of the friendship and esteem she entertained for many of its members, both during their student and professional career, and also because of her connection with the Clyde Street Veterinary School in Edinburgh, we must allude to the death of Miss Dick, sister of the late Professor Dick, founder of that school. This event took place at Burntisland, Fife, on July 14th, Miss Dick having then attained the age of 92 years. The following notice of the occurrence appeared in the *Scotsman* of July 17th :—"The death at Burntisland, on the evening of Saturday last, at the advanced age of 92, of Miss Mary Dick, sister of the late Professor Dick, founder of the Edinburgh Veterinary College, is an event of some public interest, both retrospectively and prospectively. She was intimately associated with her brother in founding and endowing the College, and since his death in 1866, when the management was transferred to the Town Council of Edinburgh, Miss Dick has continued to take the warmest interest in the prosperity of the institution. Under her brother's will, Miss Dick had been constituted residuary legatee, and managed the Burntisland property personally. By her death a large annual revenue from house property and fees will be available for the service of the College, which henceforth may be expected to be placed on a far more satisfactory basis, and to offer still greater advantages for the cultivation of veterinary science. Miss Dick was born on 1st June, 1791, at Whitehorse Close, Edinburgh, where her father, who was a blacksmith, had a forge. Her reminiscences of old Edinburgh were very entertaining. She used to relate that she had been offered the perusal of several of Scott's novels while yet only in MS., but had declined to read them both then and ever afterwards. This is doubtless to be explained by the fact that her political and ecclesiastical proclivities lay from the first in a direction diametrically opposed to those of Sir Walter Scott. At the age of twelve she crossed the Firth in an open boat to Kirkcaldy, paying 2s. for her passage, part of which consisted in being carried from the boat to the landing place on the boatmen's shoulders. Through her brother she enjoyed a very extensive acquaintanceship both at home and abroad, which she kept up to the last, every day posting and receiving a considerable number of newspapers and correspondence bearing mainly on public questions. She was an ardent Liberal, and advocated female suffrage; greatly satirical on modern extravagance and effeminacy; boasting, for example, that she had never taken a walk for health in her life, and that she had never had a cough."

With regard to the disposal of the property belonging to Miss Dick, or in which she had a life interest, according to her will it is, we understand, provided, after the payment of £100 to the Society for the Benefit of Widows of

Veterinary Surgeons, and certain other legacies, that the residue of her estate, with the accumulations of the free income to be derived from the same, shall be held by the trustees of the testatrix until it amounts to £20,000, when it shall be divided into two equal portions, £10,000 being applied in the furtherance of veterinary science in connection with the Veterinary College in Clyde Street, and the other £10,000 in the founding of a Professorship, either of comparative anatomy or of surgical anatomy, whichever of these Chairs her trustees shall consider to be most required in the interests of medical science, in the University of Edinburgh, "in memory of the late Dr. John Barclay and the late Professor John Goodsir," the testatrix adding that she was "led to found this Professorship in memory of these gentlemen, in respect of the great regard that my late brother entertained for them, and that they, I believe, entertained for him." While declaring that the period of accumulation shall not exceed twenty-one years from the date of her death, the testatrix provides that in the event of the £20,000 being reached before the expiry of that period, her trustees shall have full power, after making the division, to continue to hold both or either £10,000 for twenty-one years, and until such an amount is accumulated as may be, in the opinion of her trustees, for the most advantageous promotion of the objects contemplated. In a codicil to her will the testatrix states that she had erected certain houses at the Kirkton, Burntisland, on the property belonging to her brother's trustees, and life-rented by her at a total cost of £800; but she had not then got any title to the ground on which the houses were built; and, in the event of her death, before getting such title, and the same thus falling to her late brother's trustees, the sum of £800 more shall be employed by her trustees in the furtherance of comparative anatomy and surgery than in the furtherance of veterinary science. Of the trustees under the will, Professor Turner, Professor Chiene, and Professor M'Kendrick (Glasgow) are declared by the testatrix to have been appointed "in consequence of their special qualifications to carry out" her wishes "in regard to the disposal of the residue" of her estate.

Notwithstanding her very long connection, indirectly, with the veterinary profession, and the intimacy, if not warm friendship, she maintained towards several of its members, graduates of her brother's school, it appears somewhat strange that, in carrying out the terms of her will, none of them are mentioned, this duty being allotted to members of the medical profession who could be but little known to her, if they were not absolute strangers. Another mark of eccentricity is to be found in the bequest of such a large sum as £10,000, to found a Professorship of Comparative or Surgical Anatomy in the University of Edinburgh. A professorship of this kind in the University will do nothing to advance veterinary medicine and surgery, and it is evident that Miss Dick was not well advised in making this disposition of her property, if she really wished to benefit that branch of medicine of which her brother was so distinguished an ornament, and by the practice of which he accumulated that wealth which is now so unsatisfactorily bequeathed. Had a chair of comparative pathology been founded at the University, then a real want would have been met; or had this chair been established at the school Professor Dick created, or even a chair of veterinary anatomy instituted there, then a great benefit would have been conferred, and the value of the Professor's service to the country in the direction in which all his services were rendered, would have been greatly enhanced. As it is, we look upon the large amount of money left to the University as lost to the country, so far as the promotion of veterinary science is concerned. And no one can gainsay that this science is sorely in need of assistance, both in the matter of professorships, education, and means for research. There can scarcely be a doubt that if it had been left to Professor

Dick to dispose of his property, there would have been a very different and a much more satisfactory arrangement. However, as it is, the school, which has had serious difficulties to encounter since the death of its founder, is benefitted to some extent; and though Miss Dick's bequest will not be available, at least immediately, yet the interest of that left by the Professor will. This will doubtless be devoted to improving the curriculum of study, and increasing the conveniences and comfort of the students. The school is placed in a much more favourable position than it has been for some time, and veterinary education will reap the advantage.

While we are compelled to express our regret that Miss Dick should have so far lost sight of the interests involved in her relationship to the school, and should have so largely endowed a University which did not require her assistance, we are nevertheless gratified to learn that a statue to Professor Dick is to be unveiled in the College Square, in October next. This memorial will constitute a better stimulus to students, perhaps, than any other means, inasmuch as it will remind them that Professor Dick achieved his success, not by spurious or unworthy means, or attaching himself to the coat-tails of persons whom he might have imagined could drag him up to the elevation he desired, but by sturdiness and independence of character, straightforward conduct, and stern perseverance, applied to the circumstances of his every-day life.

Notes and News.

EXTRAORDINARY ACCIDENT BY LIGHTNING.—The *Petersburger Zeitung* reports the destructive action of a flash of lightning, which struck the stable attached to the cavalry officers' school at Krasnoje-Selo, killing sixteen horses on the spot. The electric fluid, on striking the corner of the building, seems to have travelled along the iron with which the racks were covered, and set all the hay on fire at once. The horses all fell to the ground. Most of them rose again quickly; but sixteen were found to be dead, and two were quite deaf. In all the horses that were killed the electric fluid seems to have entered at the head or the neck, passing down through the fore-feet. The killed horses were not all together or in adjoining stalls, but were scattered up and down the stable, justifying the presumption that their death was caused by their coming into contact with the metallic covering of the racks. The horses who survived were most probably not in contact with the metal at the moment when it was being traversed by the electric fluid.

FOOT-AND-MOUTH DISEASE.—From a return just issued from the Veterinary Department of the Privy Council Office, it appears there were 3,462 outbreaks of this disease in Great Britain during the first six months of this year, in which 114,102 animals were attacked, and 3,464 died. The numbers for England alone were 3,062 outbreaks, 93,070 animals attacked, and 2,503 deaths.

HONOURS AND REWARDS.—The French Chamber of Deputies has granted a pension to M. Pasteur of 25,000 francs (£1,000), with reversion to his wife and children.

Mr. George Gresswell, son of the late Dan Gresswell, F.R.C.V.S., Louth, and brother to two members of the profession, has been elected to the lectureship on Physical Science at the Diocesan College, Rondebosch, Cape Town. Mr. Gresswell is a graduate in Honours and Open College Exhibitioner of Christ Church, Oxford, and was formerly Open College Exhibitioner of Queen's College.

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SINGULAR FREAK OF NATURE.—The *East Lancashire Echo* describes a unique case of *lusus naturæ* in a calf at Wm. Scott's, Heap Fold Farm. An Ayrshire cow, which had gone her full time, was, early in the morning, observed to be in labour, and it was found that there was a wrong presentation of the calf. The case proved, as anticipated, one of malformation of a fœtus-in-utero. This curious monstrosity had one head, one neck, four fore legs, two trunks (bodies), four hind legs, and two tails—all of which were well developed, and not rudimentary, as generally happens in some of the supernumerary limbs. Mr. Briggs and Mr. Packman were in attendance, but they failed to deliver the cow of her misshaped progeny, in consequence of its great size, although embryotomy to the extent of amputating four of the limbs was performed.

Army Veterinary Department.

Gazette, July 31st.

Veterinary Surgeon (First Class) George A. Oliphant, to be Inspecting Veterinary Surgeon, *vice* George Fleming, promoted Principal Veterinary Surgeon.

Mr. Oliphant has been appointed Principal Veterinary Surgeon in India, in succession to Mr. F. F. Collins retired. From his long experience in that country, his professional abilities, tact, and judgment, Mr. Oliphant will command confidence in the discharge of the duties of this important post, which at the present time needs all the best qualities of a good administrator.

Correspondence, etc.

A CORRECTION.

SIR,—May I ask you to correct an error that appeared in your last number? The winner of Sir Frederick Fitzwygram's prize for this year was my pupil, Mr. B. A. Clancy, and not Claney, as before stated. As this correction may be of some use to him in the future, will you kindly insert this letter?

And oblige,

Yours faithfully,

Dublin, *August 13th*, 1883. T. D. LAMBERT, F.R.C.V.S.

PUPILAGE.

DEAR SIR,—At present many men are entering our ranks who are totally unfit to become veterinary practitioners. They are neither naturally calculated, nor by previous custom fitted, for the calling.

"Lancastrian," in a letter to your valuable Journal last month, very rightly remarks, "To grant diplomas to men deficient in practical matter, is unjust to the men, to the public, and to the profession."

Many of our members are not "fully qualified to practise the art and science of veterinary medicine and surgery."

Compulsory pupilage, prior to going to the schools, is the only method by which men can become "fully qualified to practise, etc." The subsequent

return which these practical and scientific men would get, would amply repay them. During their pupilage, they would discover whether the occupation was in accordance with their tastes, and could thereby prevent further waste of money, etc. The manipulation of horses would be acquired at an early age, which is decidedly advantageous.

Some remarks have been made as to the exclusion of those who are short of cash, though capable men; but such individuals are generally of a determined character, and they would not allow compulsory pupilage to stop them in their onward course. Besides, it is absurd to study the interests of a few, when those of the whole body are concerned.—I remain, sir, faithfully yours,

"EQUUS."

AN APPEAL

TO THE PRESIDENT, VICE-PRESIDENTS, COUNCIL, AND MEMBERS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

GENTLEMEN,—It is with feelings of the deepest regret and greatest reluctance that I find myself compelled to place my present position before my professional brethren, and to appeal to their sympathy and support. For one who, like myself, has occupied an elevated position, the necessity to do this becomes the more painful; but when I call to mind that the necessity has not arisen through a want of prudence on my part, this grief becomes much lessened. Throughout my whole career I have endeavoured to maintain a good name, and have constantly laboured to maintain the dignity of my profession. Almost immediately after obtaining my diploma, in 1835, I acted as secretary to a committee of influential veterinary surgeons, whose object was the attainment of a legal position for the profession, and whose exertions were ultimately crowned with success by the granting of the Charter of 1844. As a reward for my services, I was honoured with a seat at the original Council table, a position which I held from 1844 to 1854. In the latter year I was elected one of the vice-presidents, and again in 1855 and '57, '72 and '75. As a practical veterinary surgeon, I commenced my career at Newcastle-under-Lyme, and quitting this through severe family affliction and pecuniary loss, I entered the Army, served in the Crimea in 1855-56, afterwards in England down to 1870, when I retired, compulsorily placed on half pay. Since then, as is well known to the profession, I have held office as one of the examiners, and also as one of the professors at the Royal Agricultural College, Cirencester. These positions I have been obliged to relinquish, partly through advancing years and diminished energy. As these details are only known to a limited number of my professional brethren, I have ventured to name them, to show that I have ever endeavoured to do my duty and maintain the dignity of my calling. As years have advanced upon me, I regret to say that I am able to do but little for the support of my wife and family. Hence, to relieve myself from embarrassments which have throughout attended my course, I have ventured to make this appeal, which I trust will not be in vain. In conclusion, I may add that my lasting gratitude will be given for that relief which will soothe my sorrow and throw a halo of comfort around my old age. The Editors of the *Veterinarian* have kindly consented to receive donations, which should be sent to the care of Mr. Adlard, Printer, Bartholomew Close, London, E.C.

I am, gentlemen,

Your obedient servant,

THOS. WALTON MAYER, F.R.C.V.S.

50, Victoria Road, Aldershot, *August*, 1883.

CRUELTY TO ANIMALS.

[THE following communication has been forwarded for publication, and as we do not wish to detract from the position or sentiments of the writer by alteration or emendation, it is printed *literatim et verbatim.* We are informed by a reliable authority who is in a position to know, that the horse which was the subject of the trial referred to, is quite as lame as before it was *fired on both fore legs and the sole torn off its hoof*, and that there is no likelihood of its ever walking any sounder. So that in this case at least the compound operation of firing and tearing off the sole has not effected the cure of sidebone ; and it is very questionable if it ever has done so. Removal of the sole, or a portion of it, for Canker is a beneficial and common operation, and doubtless has been performed by the veterinary surgeons for the prosecution ; but they have never torn away the sole and *fired both fore legs at the same time* to effect the cure of sidebone and ringbone. The theory attempted to be advanced to explain how the supposed cure is brought about, we decline to discuss, as it is beyond our limited comprehension. But we might ask, if tearing away the sole in this barbarous fashion is an infallible cure for ringbone and sidebone, why was this horse so cruelly fired at the same time? It is needless to mention that French veterinary surgeons do not remove the sole to cure ringbone and sidebone, neither do the members of the profession in this country, so far as we can ascertain, with the exception, of course, of our amiable and humane correspondent. Speaking of the supposed painlessness of the operation, we wonder if he would consider tearing off his toe or finger-nails an affair of no moment—painless during and after the operation.]

"Humanity to animals must be considered as one of the most prominent and satisfactory features in our nineteenth century civilization, and though there sometimes exists a certain degree of suspicion that over zeal in the good cause may tend to defeat its object, yet this must be tempered by the common sense of those who understand the relation of man and animals which were given him to use and not to abuse."—*Extract from Editorial of* VETERINARY JOURNAL *for August.*

MOST heartily do I endorse the noble sentiment contained in the above extract, and with equal ardour do I endorse many other sentiments contained in that editorial on my case, I wish to goodness I could say the same of the whole production, but I am sorry I cannot, nor can I speak in complimentary terms of the editorial writer's evidence before the Court or of the evidence given by the other two veterinary surgeons who were with him, nor can any man whose mind is not pervaded with animosity, or an illogical and mean spirit.

The artical complained of being written by the Editor, and he being the head of the Veterinary Profession, it behoves him to be circumspect, and not mercilessly treat his professional brothers, nor to set a pernicious example, encouraging a spitefull and despicable sprit, which he apparently exemplifies, with all his grandiloquence, simply because he failed so egreguously in his attempt to convince the magistrates that the view he had taken of the case was the correct one. Not content with having had a full opportunity of giving his opinions to the Bench who dismissed the case, he must forsooth reap it up again, by having recourse to and calling into requisition the pages of his own Journal to bolster up his condemed and dismissed case ; he must have felt himself humiliated and beaten or he would never have shown such bad taste as to have resorted to such a questionable and indecorous a method.

When it is remembered that Dr. Fleming, Mr. Trigger, and Mr. Hodgkins admitted in their evidence that they had never once performed the operation of unsoling the horses foot in their lives, that they had never once seen the

operation performed, that they had had no experience and had no knowledge whatever of it, but in the face of this admission of their utter ignorance of the subject, one of them with great effrontery characterised it as a horribly painful operation ; said the horse would be in horrible pain for days after, etc. The other two veterinary surgeons, equally without knowledge, endorsed what he said. I may here remark the horse has never had contracted tendons, sprained tendons, nor sprained fetlock in the slightest degree ; even their saying so failed to make it so. If these eminent, scientific, and humane veterinary surgeons had only had one hundreth part of the experience I have had in these cases, they would have been ashamed of themselves to have given such evidence, or have written the editorial. Had they known anything at all about it, they would have been able to see the utterly absurd, unjust, and untruthful statements they made ; but "where ignorance is bliss its folly to be wise." Had they been honest, they would have convinced themselves, and got to know something about it before they opened their mouths. They would have done as Mr. Greaves did a long time ago, viz., when the idea was on his mind that the operation was exceedingly painful, so much so that he determined that he would be no party to it, he apprehended that the horse must be nursing his foot, and experience great suffering for weeks, unable to put his foot to the ground, he found in this he was entirely mistaken. It was altogether a falacious idea. Much of it was sentimental and immagination. They would have found as he had done, to their great astonishment, that the horse did not experience a tithe of the pain during the operation that they had imagined he must suffer, and that after the horse is let up he at once lays his whole weight upon the foot, and walk upon it as if no such operation had been performed, that there was only a little nursing of the foot afterwards. This they would have known if they had known anything at all about it, but from their evidence it was obvious they did not, and could get no other notions in their heads, only the wrong one. "There is none so ignorant as those who will not learn." I have as sensitive a nature, and am as humane, and feeling as any of the four men who tried to get me convicted. I have operated upon scores perhaps hundred of cases after all other means had failed, since I got my diploma fifty-three years ago, and I can conscientiously say that not in a single instance have I operated only when I have had a full conviction and clear perception that the operation was nessasery, and that the pain I was inflicting was for the purpose of relieving pain, and making the animal more usefull. Therefore I am acquitted of cruelty by Dr. Fleming's own showing, from his own defination of what cruelty is ; and this horse, which has done a deal of work this last month, and goes perfectly sound on the turf, along with scores of others I could name, restored from being useless, hopeless animals to usefullness and soundness. Scores of my employers will verify this fact if needs be. This is the way I have acquired the "unenviable notariety" alluded to in the Editorial, *of which I have so great cause to complain.* Mr. Greaves, in his evidence, stated that it was a necessary professional operation. He had performed it forty or fifty times for Canker, and twice for contracted feet, with almost invariable success ; that he had never performed the operation for contracted tendons, ringbone or sidebone, but he could conceive it might be beneficial for sidebone in this manner : when the sole is removed the bond of connection at the heels and quarters of the wall on the ground surface no longer exists ; and when the weight of the horse is thrown on that foot, the heels descend, and for want of the bond of connection the foot spreads out, or expands. At the end of a week or a fortnight it is quite surprising the extent of this expansion. The new horny sole grows stronger and thicker than the one removed, and has to fill up a wider space by three-quarters of an inch than the old sole ;

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as it grows it fixes permanently the quarters and heels of the wall in this wider shape and size. By this means it naturally relieves the binding tightness of the hoof upon the tumified and ossified latteral cartilages; in fact, adapts the wall to the altered conditions produced by the side-bones, and gives ease and comfort, just as the pressure of a tight boot made of strong, thick leather, from off a corn gives reiief to the corn. If Dr. Fleming, with all his genius and sophistry, can refute this hypothesis, let him do so at once, or for ever hold his peace. Possibly he may evince as much experience and erudition as he displayed in trying to prove its cruelty. I can compare the position of these three veterinary surgeons to a certain scientist who, being anxious to prove his case, illustrated it in the following manner: "Supposing a spider is inside a clock-case. When I wind up the clock the spider will think there is an earthquake going on." When, all of a sudden, a man amongst the audience possessing some of that rare artical "common sense," which scientists sometimes lack, jumped up and, in a loud voice, asked, *How do you know what the spider would be thinking?* The scientist floundered about, but it was evident he was shot in the wing; for he at once collapsed. The question was asked on that occasion, and I ask myself the question on this occasion, Which has the long ears now?

Checkley, Staffordshire,
August 9th, 1883.

WILLIAM WALTERS,
Veterinary Surgeon.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from G. Whitworth, Grantham; W. S. Careless, Lincoln; J. McCall, Glasgow; "Equus"; J. Clark, Coupar Angus; R. Rutherford, Edinburgh; T. Walley, Edinburgh; W. Walters, Checkley; T. D. Lambert, Dublin; A. Spreull, Dundee; J. J. Meyrick, A.V.D., London; G. Fleming, P.V.S., London; C. A. Francis, London; W. Broughton, Leeds; E. Standinger, Frankfort.

BOOKS AND PAMPHLETS: *W. Robertson*, Text-Book of the Practice of Equine Medicine; *G. Grünwald*, Experimentelle Beitrage zur Lehre über einige Contagien; *S. Gamgee*, On the Treatment of Wounds and Fractures; How to Outwit the Horse; *E. Standinger*, Hundemaulkorbe und Hundefuhrwerke; *H. Pütz*, Ueber die Beziehungen der Tuberculose des Menschen zur Tuberculose der Thiere.

JOURNALS, ETC.: *Presse Vétérinaire; American Live Stock Journal; Lancet; Mark Lane Express; Thierarzt; Deutsche Zeitschrift fur Thiermeaicin und Vergleichende Pathologie; Annales de Méd. Vétérinaire; Recueil de Méd. Vétérinaire; Wochenschrift für Thierheilkunde; La Clinica Veterinaria; Edinburgh Medical Journal; Archives Vétérinaire; Echo Vétérinaire; Repertorium für Thierheilkunde; Live Stock Journal; Medical Press and Circular; Journal de Méd. Vétérinaire et de Zootechnie; Revue Vétérinaire; Nature.*

NEWSPAPERS: *Glasgow Herald; Glasgow News; Scotsman; City Press; East Lancashire Echo; Irish Times; Lahore Civil and Military Gazette.*

TO CORRESPONDENTS.

No notice can be taken of anonymous communications. Whatever is intended for insertion must be authenticated by the name and address of the writer, not necessarily for publication, but as a guarantee of good faith. We cannot undertake to return rejected communications.

A number of communications are held over until next month.